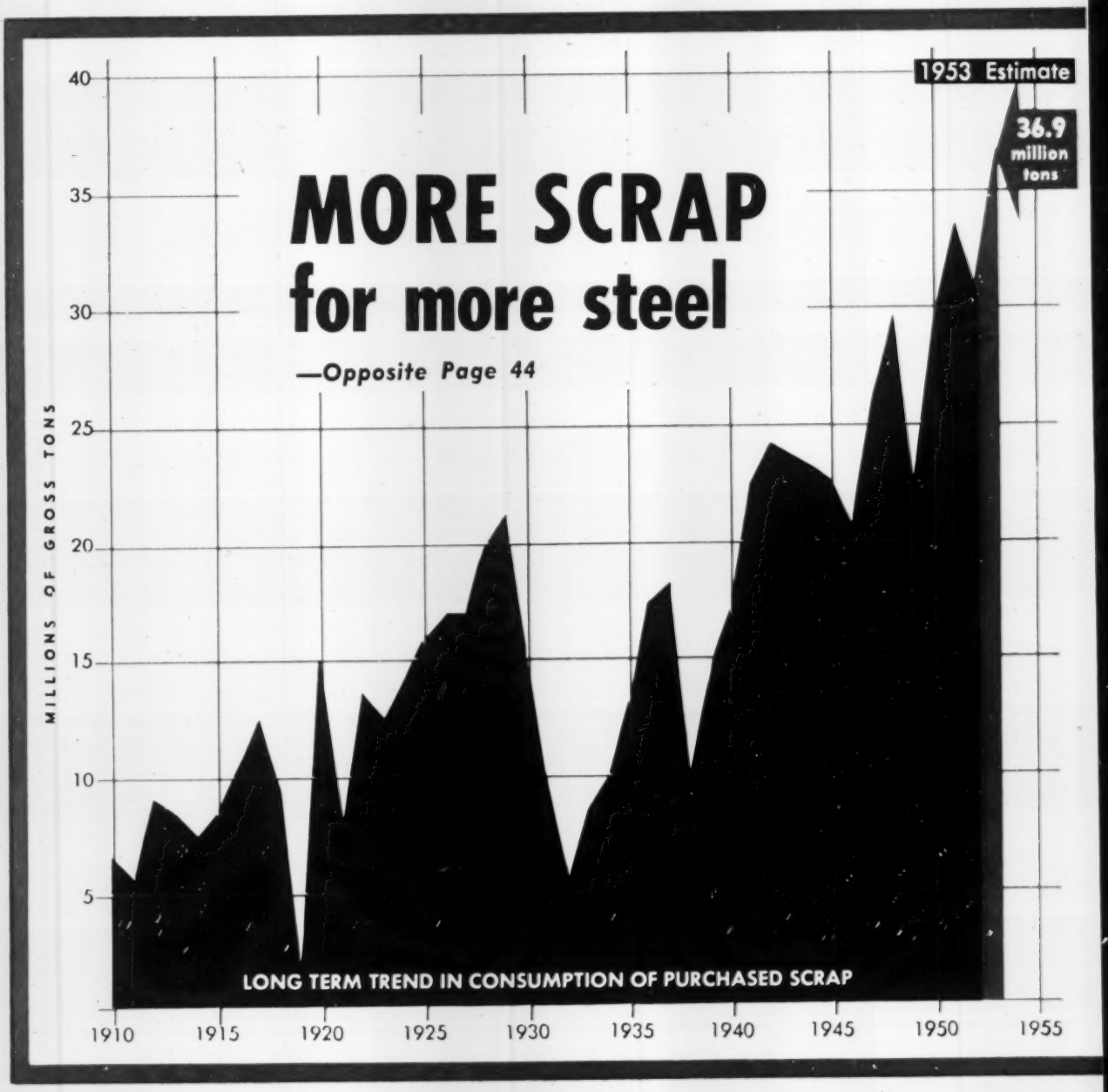
JANUARY 12, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING



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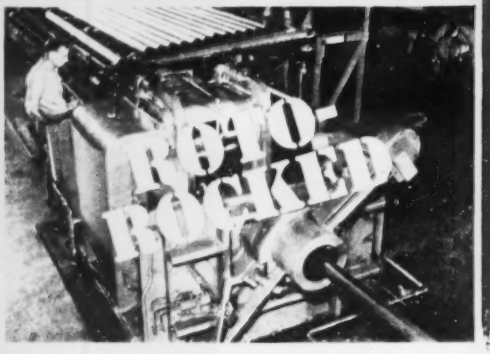
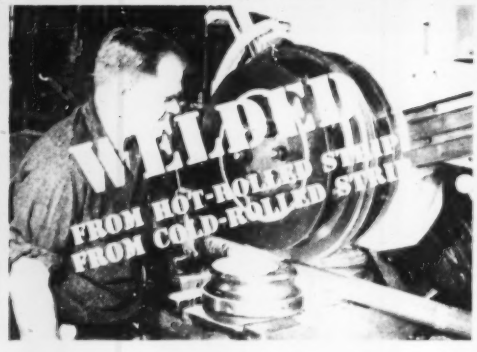
Let's take a

CLOSER LOOK

at TYPES of Tubing





Different in surface finish. Different in dimensional tolerances. Different in machinability. Different in cost. Once you have determined to simplify fabrication of hollow parts with versatile seamless or welded tubing, be sure you're using the *right type* for the job at hand. If you're a long-time tubing user, review all types available to *know* that you're getting the most for your money. Each type has its place—ONE type is best for *your* specific requirement.

The B&W Technical Staff is always ready to cooperate with you in the selection of the proper carbon, alloy, or stainless tubing for your job. Their aim is to help you avoid difficult fabricating problems, eliminate rejects, and save production time and costs.

If you have a specific tubing requirement, tell us end-use, OD, ID, size of finished part, method of chucking and sequence of machining operations, description of finished part, finishing procedure—welding, brazing, plating, heat-treating, carburizing, nitriding, special dimensional accuracy if required, and type of finish desired. Put your problem up to Mr. Tubes—your B&W Tube Representative.

New Bulletin TB-340 is a compact guide to mechanical tubing possibilities, and well worth writing for.

THE BABCOCK & WILCOX COMPANY

TUBULAR PRODUCTS DIVISION

General Offices & Plants

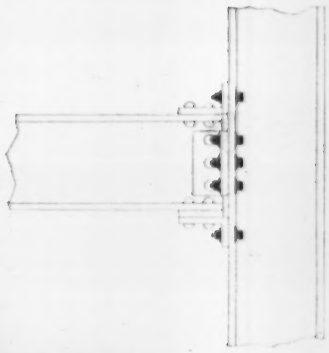
Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

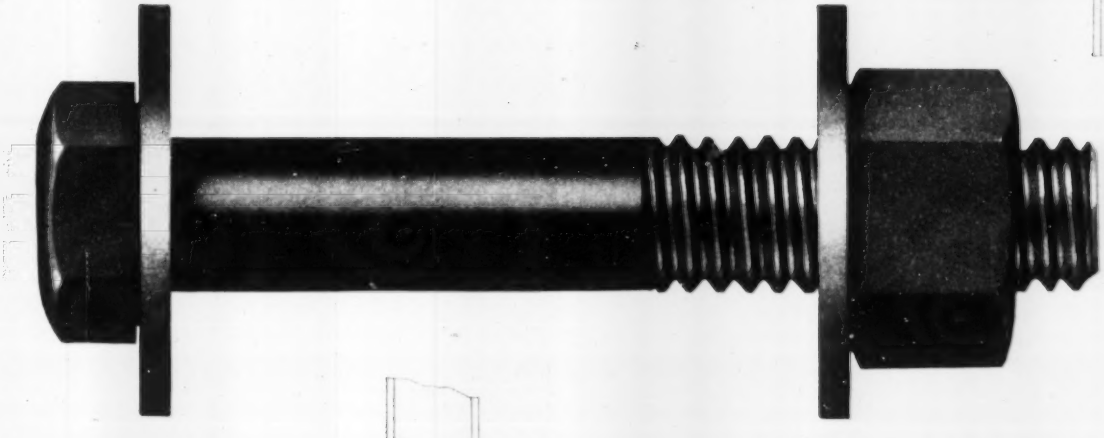
Sales Offices: Beaver Falls, Pa. • Boston 16, Mass. • Chicago 3, Ill. • Cleveland 14, Ohio • Denver 1, Colo. • Detroit 26, Mich. • Houston 2, Texas • Los Angeles 17, Cal. • New York 16, N. Y. • Philadelphia 2, Pa. • St. Louis 1, Mo. • San Francisco 3, Cal. • Syracuse 2, N. Y. • Toronto, Ontario • Tulsa 3, Okla.

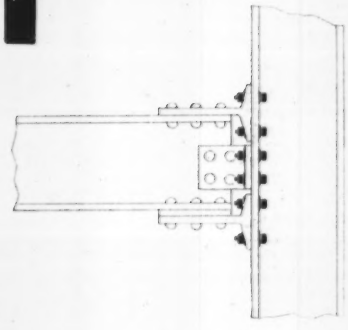
B&W SEAMLESS and WELDED TUBES

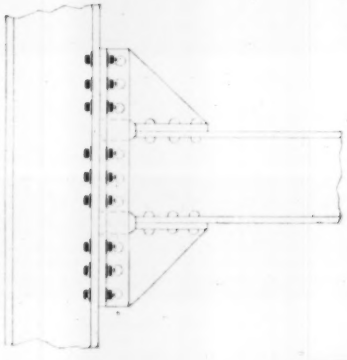
TA-1681-M

Save Construction Time with BOLTED Joints









You can erect steelwork in minimum time when you use Bethlehem High-Strength Steel Bolts to join the structural steel members.

Bethlehem High-Strength Bolts make possible a saving in construction time because they can be installed so quickly. The hexagonal nuts are driven up with power wrenches, making a tight, long-lasting joint. The bolts replace field-driven rivets, and as they can occupy holes originally punched for rivets, no change in shop work is necessary.

In the assembly of Bethlehem High-Strength Bolts, two hardened washers are added, one under the head, the other under the nut. This permits the development of the high clamping force required, without deforming the connected material. So tightly are the nuts driven up on the bolts that there is no chance of slip at normal working loads.

Bethlehem High-Strength Bolts are made from carbon steel at our fastener plant at Lebanon, Pa. They are heat-treated by quenching and tempering, to meet the requirements of ASTM Specification A-325. They come in a wide range of sizes, meeting virtually every need. We also manufacture the standard-round or square-beveled washers used with high-strength bolts. For additional data, write for our informative 8-page booklet, "High Strength Bolting for Structural Joints". Please send your request to the nearest Bethlehem office.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

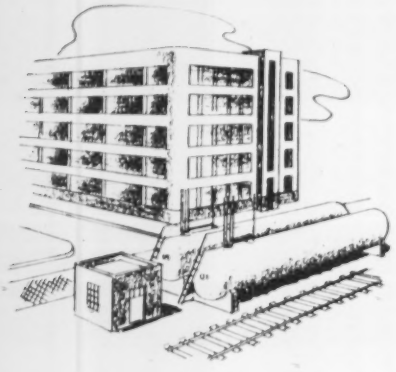
Bethlehem supplies every type of Fastener

Phillips 66

Philgas*

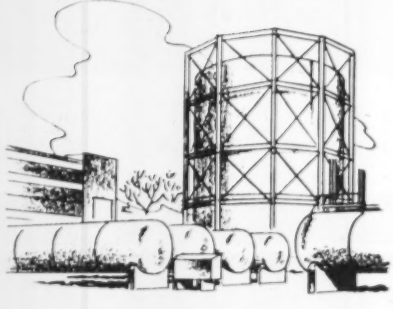
THE ALL-PURPOSE FUEL

For Industries



Philgas, a clean, high-quality LP-Gas, is being used by leading industries for heat treating, mold drying, core baking, ceramic firing and many other operations. Philgas butane-propane systems are automatic, cutting down on overhead while assuring constant furnace temperatures, atmospheres, and pressures.

For Utilities



Free from harmful contaminants, Philgas is used by many progressive utilities to augment supplies of natural or manufactured gas. Cleanliness, uniformity, constant pressures (high or low) and easy automatic operation make Philgas a *superior* product. It's America's largest selling brand of LP-Gas.

*Phillips 66 and Philgas are the Phillips Petroleum Company trademarks for its high quality propane-butane LP-Gas or bottled gas.

PHILLIPS PETROLEUM COMPANY

Sales Department **Bartlesville, Oklahoma**

Offices located in Amarillo, Tex., Atlanta, Ga., Chicago, Ill., Denver, Colo., Des Moines, Ia., Pontiac, Mich., Indianapolis, Ind., Kansas City, Mo., Milwaukee, Wis., Minneapolis, Minn., New York, N. Y., Omaha, Nebr., Raleigh, N. C., St. Louis, Mo., Tulsa, Okla., Wichita, Kan.

Only B. F. Goodrich makes the grommet belts that cut costs 20 to 50%!

Save 3 ways! Investigate today! Write or mail coupon

You save belt costs because belts last longer, save production costs because machines keep running with fewer interruptions, save maintenance costs because they need less attention.

Patented grommet belts by B. F. Goodrich represent the only basic change since invention of the V belt. Belts last 20 to 50 per cent longer, depending on service. (The more severe the service, the greater the increase over ordinary belts.) Grommet belts have more rubber; they're more flexible, give better grip, less slip.

What is a grommet?

A grommet is like a giant cable except that it's *endless*—a cord loop built up by winding heavy cord on itself. There is no overlapping cord *section* as in all ordinary belts. Most belt failures occur in these sections where cords overlap!

All cords put to work

Each of the two grommets and every part of a grommet carry their share of the load. In ordinary belts under high tension the center cords "dish" because tension is greater near the driving faces. Dished cords are doing less work, not pulling their share. Grommet belts have no center cords, there is no dishing—therefore much more strength in proportion to cord volume—and less stretch. Grommet belts stretch, on an average, only about one-third as much as ordinary belts.

Better grip, less slip

Grommet belts have more rubber in relation to belt size. Without any stiff overlap, they're more flexible, grip pulleys better. Size for size, grommet belts give ¼ more gripping power, pull heavier loads with a higher safety factor. Because there is less slip, there is also less surface wear.

Send for proof

Send the coupon for a set of reports telling users' experiences and showing actual installations where grommet belts outlasted all others. Some typical cases:

"... within a few days ordinary belts had stretched.... After six months of 24-hour-a-day service BFG grommet belts haven't stretched at all...."

"Ordinary belts lasted only 5 or 6 weeks ... B. F. Goodrich grommet belts are in their sixth month of service...."

"Previous belts suffered from shock loads, wore out fast.... BFG grommet belts have been in service 2 years with no shut downs..."

There are hundreds of cases like these.

They cost no more

BFG grommet belts cost not one cent more than others. The savings they make for you are clear profit. They are made in C, D and E sections. They are patented by B. F. Goodrich. No other V belt is a grommet belt (U. S. Patent No. 2,255,294).

Write, send the coupon or see your B. F. Goodrich distributor. (He will show you his "X-ray" belt that shows the grommet construction clearly.)

Grommet V-Belts BY

B.F.Goodrich

FIRST IN RUBBER

The B. F. Goodrich Company
Dept. S-1
Akron, Ohio

☐ Send set of reports telling users' experiences and showing actual installations proving that B. F. Goodrich grommet belts outlast all others.

☐ Have distributor show me the "X-ray" belt that shows how B. F. Goodrich grommet belts are made.

Name _____

Firm Name _____

_____

Street Address _____

City _____

State _____

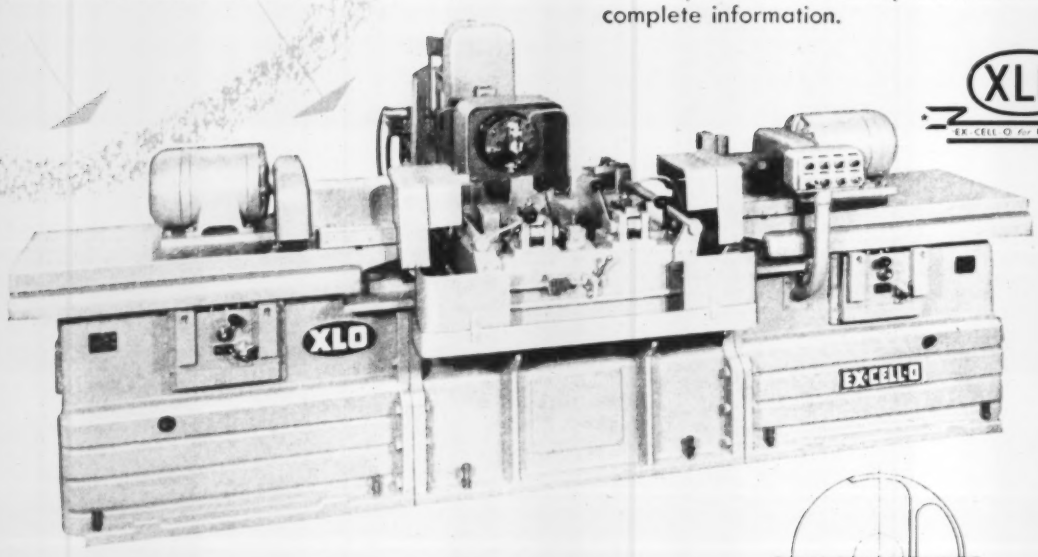
SAVE TIME, INCREASE PRODUCTION

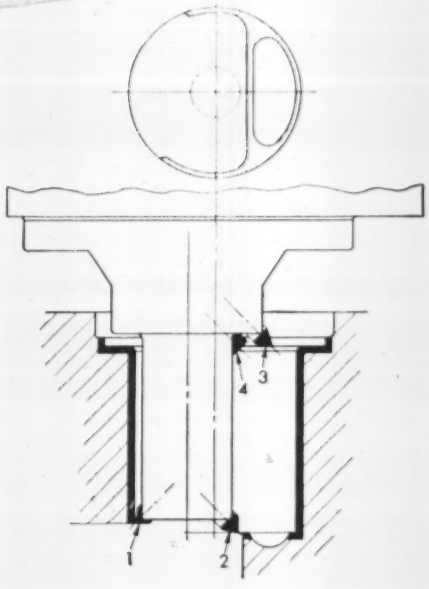
with EX-CELL-O WAY MACHINES

Ex-Cell-O Way Machines save time by working from 2, 3, or 4 directions simultaneously, holding accurate relationship between the various operations. Standard, self-contained way units can be rearranged for different work, using units individually or combined with others.

This Three-Way Precision Boring Machine uses three standard way units. The two side units perform conventional boring, plunge-facing and chamfering operations on holes approximately 3 inches in diameter. The rear station performs more complicated work requiring a cross-feed head (see drawing). The bore diameter at the rear station is 4 inches, and is held to limits of plus or minus .0005".

Ask your Ex-Cell-O representative for complete information.





Right: Tool layout for roughing operations at the rear station. Tool 1 bores the hole as the table feeds forward to a positive stop. Then the cross-feed head moves across while tool 2 faces an area at the base of the bore and tool 3 faces the shoulder of the counterbore. As the cross-feed slide approaches the end of its stroke tool 4 chamfers the edge of the bore. The table then reverses in feed until tool 2 blends its cut with the bore produced by tool 1, and tool 3 bores the counterbore, after which both table and cross-feed head return to the start position. The upper drawing is a view looking into the hole. The circle in broken lines shows the path of tool 2 while tool 1 is boring. The shaded portion is the area faced by tool 2.

EX-CELL-O CORPORATION

DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS
CUTTING TOOLS • RAILROAD PINS AND BUSHINGS
DRILL JIG BUSHINGS • DAIRY EQUIPMENT
AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS

52-27

This Week in Metalworking

STEEL

Vol. 132 No. 2 Jan. 12, 1953

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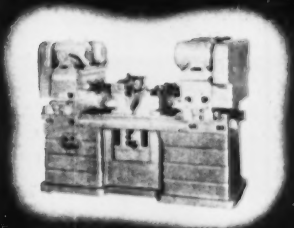
XLO
EX-CELL-O for PRECISION



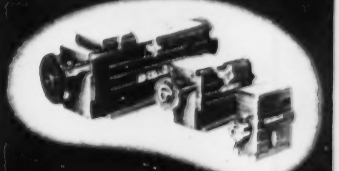
PRECISION MACHINE TOOLS

CONTINENTAL CUTTING TOOLS

PRECISION GRINDING SPINDLES

DRILL JIG BUSHINGS

AIRCRAFT AND PRECISION PARTS



HYDRAULIC POWER UNITS

Products of

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CORPORATION
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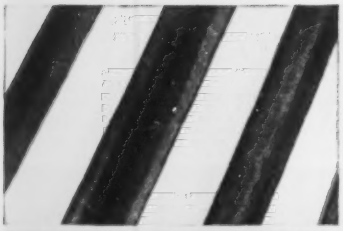

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Behind the Scenes...

Our Sentiments

We'd like to thank the many readers who sent us greetings and well-wishes for the holidays. We have them all displayed around us in our "office" here and we are racking our brain to find a way to get up a puzzle about "If Geraldine read 17 of them and we read 23 and the sum of the total difference . . . etc." If one comes along in the future work it. It's bound to be simple.

The Boys with the Eye

This week's cover features a chart which is tied in with the scrap insert that appears to the East of here. Editorial work for the piece was handled by Market Editor Bill Rooney.

This is another of the special jobs that owes a lot to the art department. All these graphs and illustrations plus the layout have to be done and then agreed on by the artists and the editors (a tough-to-please bunch of judges if we've ever seen one.)

Almost every editorial page of every issue requires some work by Bill Kellogg and his staff of artists. But the real elephant-sized task of the year is the Yearbook issue just passed. Eight men worked on this almost full time for over a month. Several of them started long before that and almost all of them worked overtime at it as they came down to the line. The boys are still recuperating from that one. George Farnsworth, he did the cover almost single-handed, says he can still feel the pressure.

In the Ads

We were over talking to Jim Zuber, business manager, the other day. We got to discussing the presence of ads in a technical book. He says it's almost a ten to one bet that somebody will come up with the idea that we should throw all the advertising pages out and run nothing but editorial. After some hasty figuring, Jim says that we could perhaps do it all right, but we'd have to charge something like $100 a year for your subscription.

Our studies, by the way, show that the ad pages in STEEL *are* well read. Informative advertising creates its own readership and the 6310 advertising pages in STEEL during 1952 had a whale of a lot of information in them. Incidentally, pardon our swelling chest, we gained 17 per cent over 1951 in advertising pages, and 1951 was a 17 per cent gain over 1950.

While we're on the subject of studies and reports we'd like to express the research department's appreciation of your co-operation in answering questionnaires for us.

Puzzle Corner

This week we have two unanswered puzzles to get cleared up. The first one is in the issue of Dec. 22. It is the one about the milk dropping into the water. Right answer is that there will be a 50-50 mixture in 693 seconds. In with that one were Leo C. Kaye, International Business Machines Corp. and L. D. Rice, Timken Roller Bearing Co.

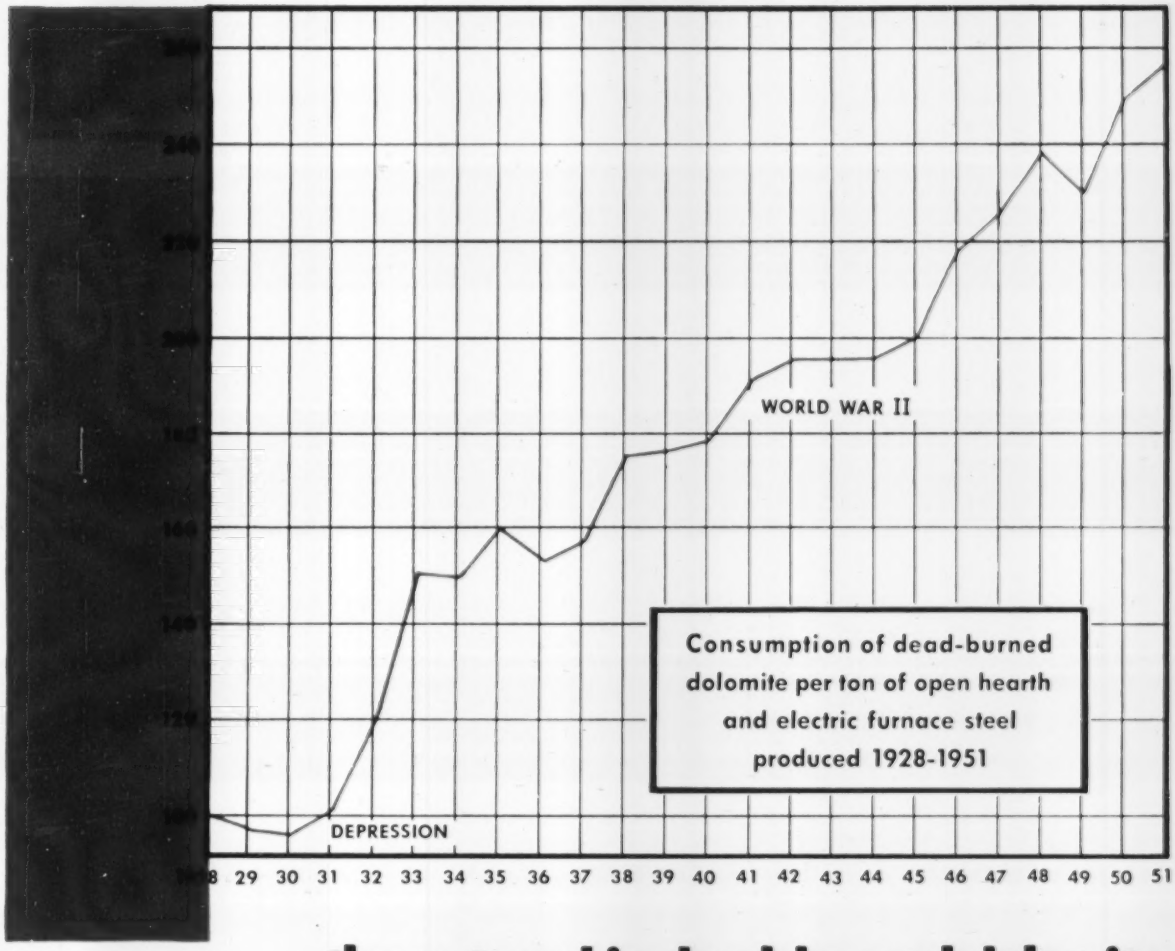
Second unanswered puzzle is the one in the issue of Dec. 29. It's the one about Al and Sam having a fixed amount of money and then doing some trading. Correct figure for that one is that Al had $5.00 and Sam had $7.00. First with that one were: F. L. Scott, Baker Oil Tools Inc., J. H. Jewett, United Steel & Iron Works Co., Mrs. E. Shrdlu, Cleveland, Ralph Pappenheimer, Specialty Device Co., John Hickey Jr., Bohn Aluminum & Brass Corp., Harry R. Rupp, Service Iron & Steel Co., Mrs. Carl E. Heussner, Birmingham, Mich. and T. A. Kostenbader, Bethlehem, Pa.

As long as we have our boys Al and Sam throwing money around (you should have seen them New Year's Eve) we'll use the puzzle suggested this week by Mr. Kostenbader. He says that Al and Sam have a fixed amount of money. If Al gives Sam a dollar, Sam will have *three* times as much as Al. But if Sam gives Al a dollar they'll both have the same amount. How much does each man have?

Just so you'll be ready for it when it comes we'll warn you that we have a real buster in the works. We're still trying to work it out and as soon as we, or Geraldine, can do it we'll give it to you. Brother, it's rough.

Shrdlu

(Metalworking Outlook—Page 29)


WORLD WAR II
DEPRESSION
Consumption of dead-burned dolomite per ton of open hearth and electric furnace steel produced 1928-1951
29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51

the uptrend in dead-burned dolomite

THIS chart presents a graphic picture of the trend in fettling refractories. Taking as a base period 1928, the first year for which industry figures are available, it indicates the increase in consumption of dead-burned dolomite per ton of steel produced annually through 1951.*

Dead-burned dolomite was developed as a substitute for Austrian magnesite in 1914. At that time it was generally thought that the product would disappear when European shipments could be resumed. However, product and process research resulted in such improvement in quality and cost that the use of dead-burned dolomite climbed steadily throughout the 1920s. The trend gained impetus as a consequence of efforts of steelmakers through the depression years to take greater advantage of the economies promised through the increased use of dead-burned dolomite.

Despite the consistently upward trend of 24 years, and the fact that the steel industry utilized slightly over 1 ¾ million tons in 1951, there have been few times since the late '30s when the supply of dead-burned dolomite was sufficient to permit any major shift to it by users of other fettling materials. Now for the first time in 10 years, with two new kilns in operation at our Ohio Works, there are adequate supplies available for any steel producer who wishes to convert to dead-burned dolomite practice or to improve his present practice through the use of more of this quick-setting, dependable, low-cost refractory.

*Each year's figure expressed as percentage of base period.

GRANULAR BASIC REFRACTORIES

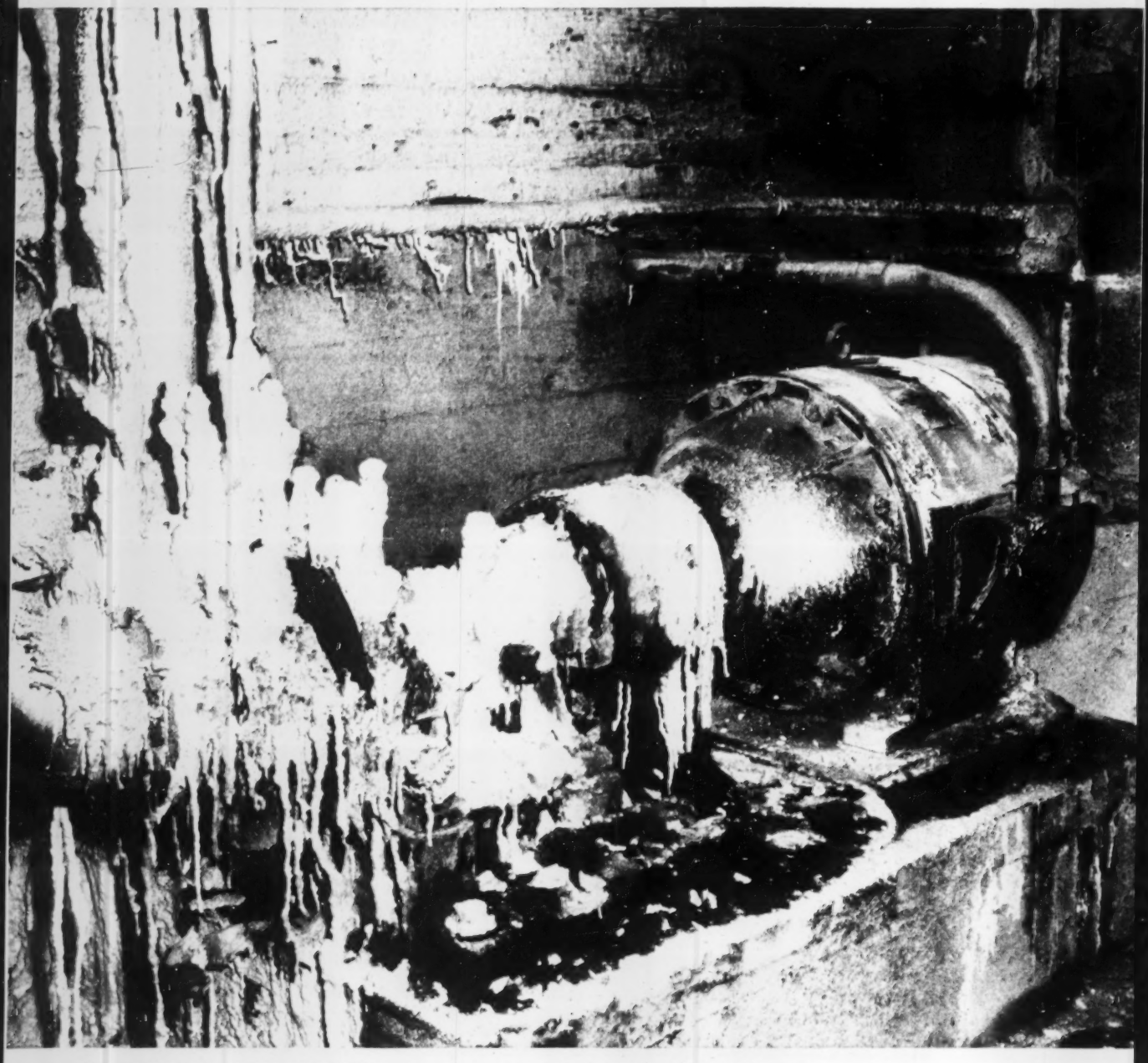
Basic Refractories Incorporated

845 HANNA BUILDING, CLEVELAND 15, OHIO

Write for free booklet "Underlying Steel". This graphic booklet tells the story in words and pictures of granular basic refractories and their role in the production of open hearth steel. Address Dept. 16.

Exclusive Agents in Canada: REFRACTORIES ENGINEERING AND SUPPLIES, LTD., Hamilton and Montreal

WHEN JOBS ARE TOUGH



CORROSIVE ATMOSPHERE doesn't bother this standard, "off-the-shelf" Tri-Clad motor. Totally enclosed, fan cooled, it runs 12 hours a day, six days a week, driving a flash cooler pump under tough conditions in a chemical plant.

GENERAL ELECTRIC

INDUSTRY DEPENDS ON G-E TRI CLAD MOTORS

REG. U.S. PAT. OFF.

Here are three typical tough jobs being done safely, economically, and without interruption, by G-E Tri-Clad motors. They help show why more than 10,000,000 horsepower of G-E Tri-Clad motors are serving American industry today.

WIDEST VARIETY

With the widest selection of standard motors obtainable anywhere, the Tri-Clad motor line offers ratings up to 2000 hp; all types of enclosures; gear motors, brake motors, and adjustable-speed drives—plus many other mechanical and electrical modifications to meet your requirements.

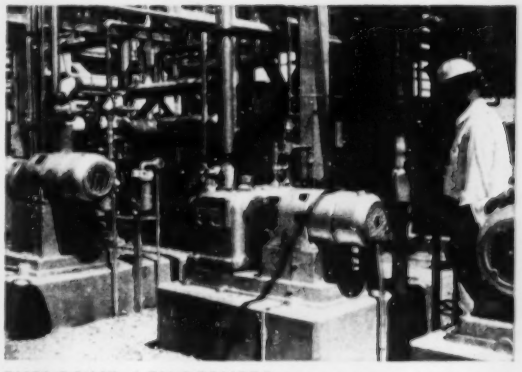
TRIPLE PROTECTION

You get triple protection with *every* Tri-Clad motor—against physical damage, electrical breakdown, and operating wear and tear. Completely enclosed bearings last longer because they can be relubricated if necessary—and *without shutdown!* For specific product information, use the coupon below, or contact your nearby G-E Apparatus Sales Office, authorized G-E Agent or Distributor.

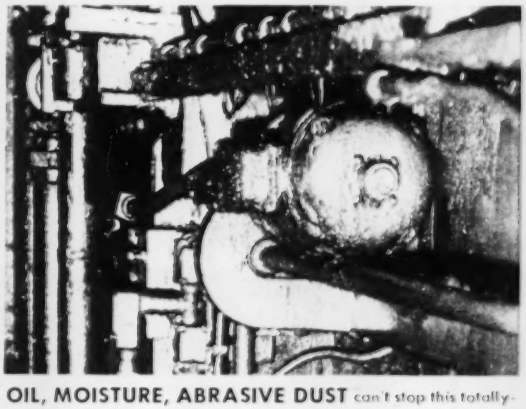
IMMEDIATE DELIVERY

Most standard G-E Tri-Clad motors are available immediately from stock. And the most complete sales and service network in the motor industry assures you prompt service by trained specialist and application engineers, for all your motor problems. General Electric Co., Schenectady 5, New York.

752-16



EXPLOSIVE ATMOSPHERE dangers are avoided by using standard explosion-proof Tri-Clad motors, such as these gear-motors driving water and hydrocarbon pumps in an oil refinery.



OIL, MOISTURE, ABRASIVE DUST can't stop this totally-enclosed Tri-Clad motor, operating below the strip in a cold strip steel mill. Motor is completely protected inside and out.

PROGRESSIVE MECHANIZATION . . .

a new G-E MORE POWER TO AMERICA program—motion picture and manual—case histories of the latest mechanization trends.

Send for literature.

Section S 752-16
General Electric Co., Schenectady 5, N. Y.

Please send me the following on Progressive Mechanization:

☐ Free copy of the Progressive Mechanization Manual (GEA-5789)

Please send the following product bulletins:

☐ GEA-3580 (Open Dripproof Motors)

☐ GEA-4400 (Totally Enclosed Motors)

Name .....

Firm .....

Address .....

City ..... Zone ..... State .....

END-WELDS STUDS TO STEEL IN A SPLIT-SECOND
ELIMINATES DRILLING, TAPPING, HAND WELDING
REDUCES MATERIAL HANDLING—TAKES THE TOOL TO THE WORK
SAVES STEEL—ELIMINATES HEAVY BOSSES AND FLANGES
IMPROVES PRODUCT DESIGN AND QUALITY
TAKE ADVANTAGE OF
NELWELD COST SAVINGS
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Fast installation of handling accessories that can be easily removed.

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NELSON STUD WELDING

DIVISION OF GREGORY INDUSTRIES, INC., LORAIN, OHIO

LETTERS TO THE EDITORS

Ohio as a Steel Producer

As a news reporter I need information as to the amount of steel produced in the state of Ohio per year. What percentage is this of the nation's output?

Twila Carman
East Lincoln Way
Minerva, O.

• *Ingot capacity for Ohio, as of Jan. 1, 1952, was 22,576,360 net tons while the nation's capacity was 108,587,670 net tons. Ohio produced about 21 per cent of the nation's output.—ED.*

Question on Continuous Casting

I would be very much obliged to you if you would kindly send me at your earliest convenience reprints of articles on continuous casting of ferrous and nonferrous metals based on the Junghans and Rossi process, which articles have appeared in STEEL during the past few years.

F. J. Prueter
sales manager
Cosa Export Co. Inc.
New York

• *They're being sent.—ED.*

Interest in Latin America

Please send me tear sheets of "Steelmaking in Latin America," (Nov. 24, p. 79).

Oswald Schmidt
Department of Geography
University of Pittsburgh
Pittsburgh

• *Sent.—ED.*

Slip Up in Canada

You people are usually so accurate that I don't know how you slipped up on this one. I'm referring to the photo caption (Dec. 15, p. 116) in which you incorrectly describe the Chute-du-Diable, Quebec, development as an Alcoa operation. It is actually being done by the Aluminum Co. of Canada, Ltd.; the two are competitive companies and not associated together in any way.

George O. Morgan Jr.
assistant to the president
Aluminum Import Corp.
New York

Who and Where Department

Your article "No Heat Needed" (Dec. 15, p. 103) deals with a new power washer and we wonder if you could give us the name of the manufacturer of this unit.

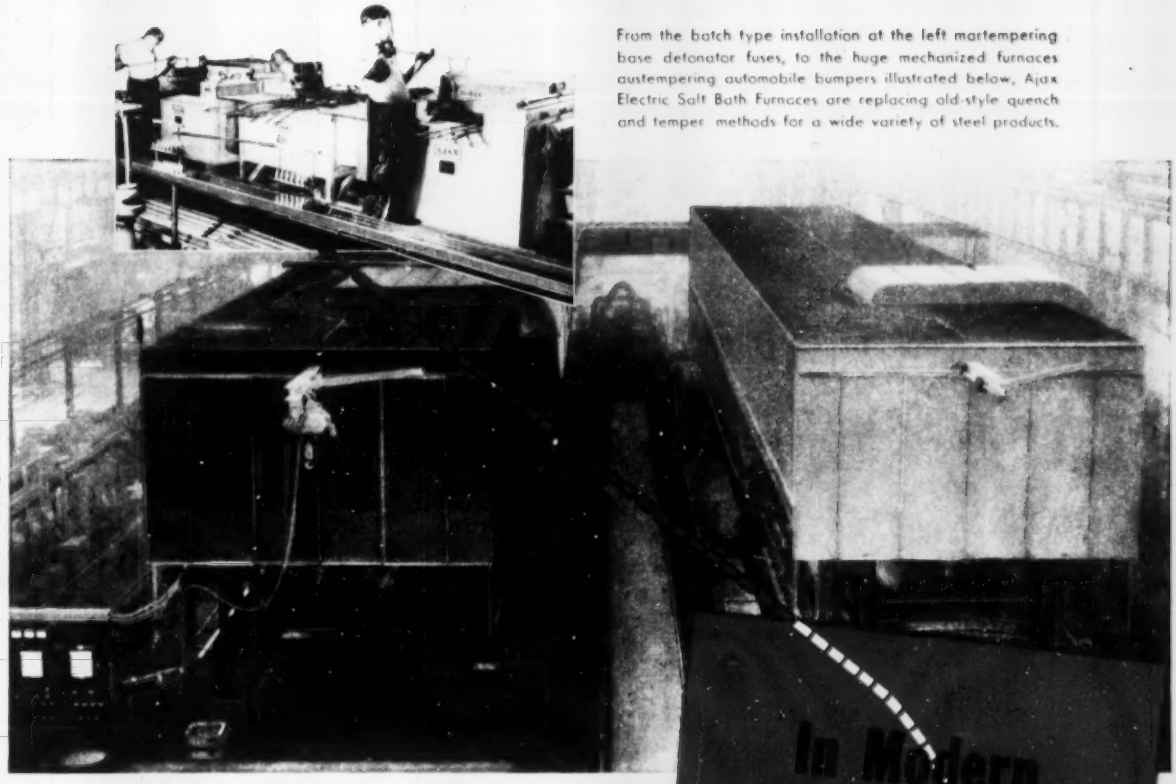
C. G. Hendricks
general manager
Defiance Screw Machine Products
Defiance, O.

• *Write to E. F. Houghton & Co., 301 W. Lehigh Ave., Philadelphia 33, for further information on the power washer.—ED.*

Smooth as Glass Lubricants

In your article "Glass for Dies" (Dec. 8, p. 93), mention is made of the Ugine

Continued on following page



From the batch type installation at the left martempering base detonator fuses, to the huge mechanized furnaces austempering automobile bumpers illustrated below, Ajax Electric Salt Bath Furnaces are replacing old-style quench and temper methods for a wide variety of steel products.

From ring gears to plow points . . .

From bearing races to cast iron cylinder sleeves . . .

From uniformly shaped metal parts to odd and irregular sizes . . .

Scores of installations have proved the tremendous possibilities for economy, greater speed and efficiency in martempering and austempering, because all water and oil quenches are eliminated.

Distortion is so negligible that parts can be machine finished *before* hardening. Final grinding is eliminated or materially reduced. Scale, decarb and quench cracks are eliminated. Toughness and ductility are increased. The work is done materially faster in less floor space with lower labor costs. Let the Ajax Metallurgical Service Laboratory prove these claims on a specimen batch of your actual parts, under actual working conditions.

Write for Ajax Bulletin 120

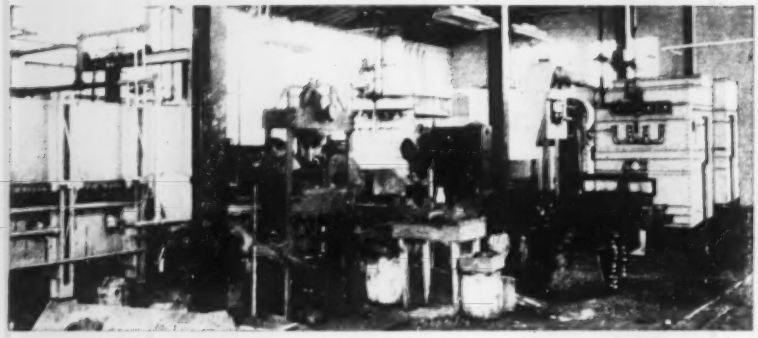
AJAX ELECTRIC COMPANY, INC.

952 Marshall Street Philadelphia 23, Penna.

In Modern Heat Treating— the Trend is to MARTEMPERING and AUSTEMPERING

World's largest manufacturer of electric heat treating furnaces exclusively

AJAX ELECTRIC SALT BATH FURNACES



Niagara Aero Heat Exchanger quickly pulls down the initial peak load of heat in quenching . . . and saves cooling water

Accurate control of quench bath temperatures and quickly effective capacity to handle the initial peak load of heat in quenching prevents production set-backs, increases the output of your heat treating department, prevents oil fires, saves you losses from rejected parts.

Niagara Aero Heat Exchangers give you this control in both furnace and induction hardening methods. They prevent both over-heating and over-cooling of the quench bath. Hundreds of heat treaters know they prevent many troubles, constantly improve quality and increase production.

They quickly pay for themselves by saving cooling water coils and extend your quench capacity without extra water or cooling tower.

Write for Bulletin #120 giving complete information.

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Over 35 Years' Service in Industrial Air Engineering

Dept. S, 405 Lexington Ave. **New York 17, N. Y.**

Experienced District Engineers in all Principal Cities of U. S. and Canada

LETTERS

Concluded from preceding page

Sejournet process concerning glass for dies and lubricants. We would be interested in obtaining any literature, information or references you may have concerning this subject.

T. R. Critchlow
assistant development engineer
Oliver Iron & Steel Corp.
Pittsburgh

• *The companies involved specifically requested that their names be withheld while development work is going on. STEEL will, of course, publish additional information as it becomes available.—ED.*

Facts on Flying Freight

Your article "Air Freight Flies High" (Dec. 29, p. 46) has received a lot of favorable comment in the industry. I would like to add my commendation on a well written article.

G. W. Hawes Jr.
district sales manager
American Airlines
Cleveland

Calibration System

Will you please tell us where we may secure a small amount of pure tin, zinc and lead. This is for use in calibrating thermocouples.

J. C. Hardgrave
professor, mechanical engineering
Texas Technological college
Lubbock, Tex.

• *In addition to sources for pure metals which we have sent you "Letters to the Editors" (Dec. 15, p. 12), we thought this information from Weiller Instruments Corp., New York, might be of interest to you.*

"We have designed a series of temperature standards. Electric furnaces with low inertia heaters and crucibles are filled with salts or metals carefully selected for their high purity. The standard is connected to the line and the metal is melted. The thermometer to be calibrated is carefully inserted in the melted metal and the power is switched off. The temperature will now drop. When the melting point is reached, the temperature will remain stationary for an appreciable period of time (several minutes).

"Calibration to .1 degree is made very easy by this method. With some care, an accuracy of .01 degree may be obtained.

"The following points are now available: Glauber Salt—32.38° C; Metallic Sodium—97.77; Eutectic #1—144.46."
—ED.

Ductile Iron Details

Could you give me more information on Allis-Chalmers' method of making ductile iron (Nov. 17, p. 85) "New Tough Iron."

E. Spire
consulting engineer
Montreal, Canada

. . . we note that Allis-Chalmers has reported the use of common salt and calcium silicide as additives to grey iron for increasing its strength. We would be pleased to know where we might obtain further details.

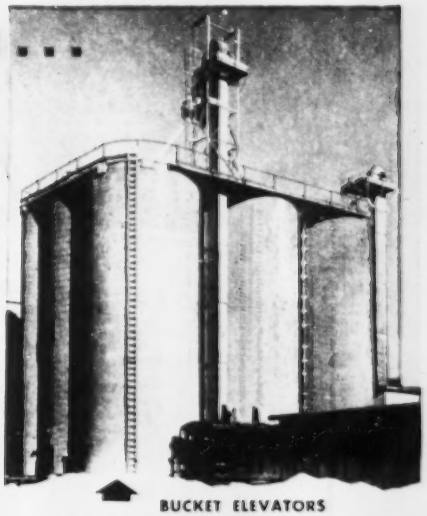
D. H. Washburn
Price Washburn, S. de R. L.
Monterrey, Mexico

• *Allis-Chalmers expected to make a further announcement in December but now informs us that that announcement will be delayed.—ED.*

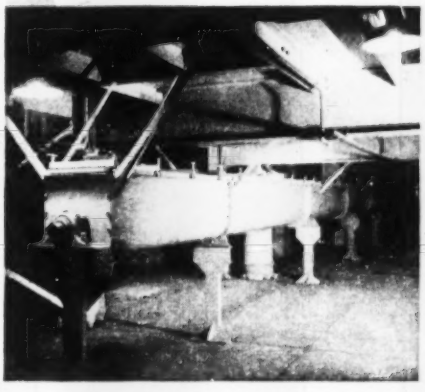
one unit or a complete system . . .

TO SPEED PRODUCTION

around the clock



BUCKET ELEVATORS



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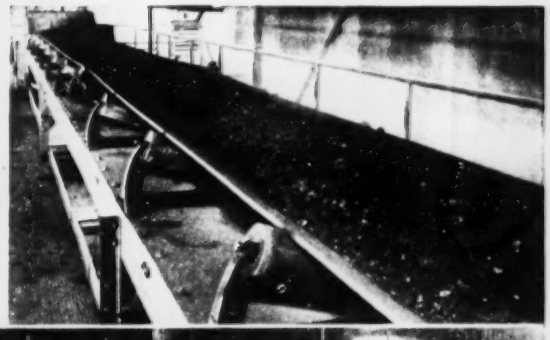

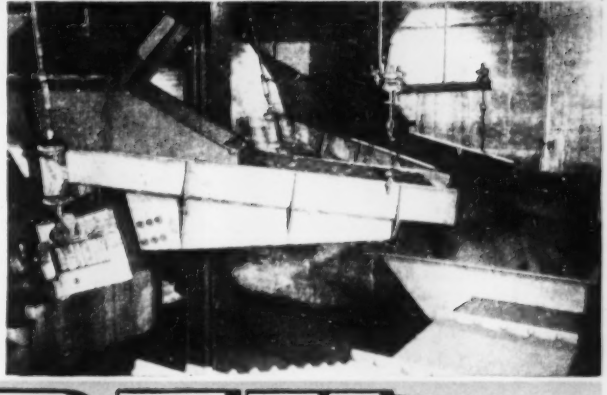

Efficient, fast, low-cost production (24-hour service if need be) calls for adapting the right unit or units to each individual job. Since Jeffrey builds so many kinds of handling devices, isn't it logical to rely upon the recommendations of our Engineers?

Whether it's conveying, elevating, feeding, drying, cooling, crushing or pulverizing, packing or transmitting power . . . Jeffrey can provide the right unit—or complete system—with a working knowledge based on 75 years of experience and scores of installations. What is your materials-handling or processing problem?

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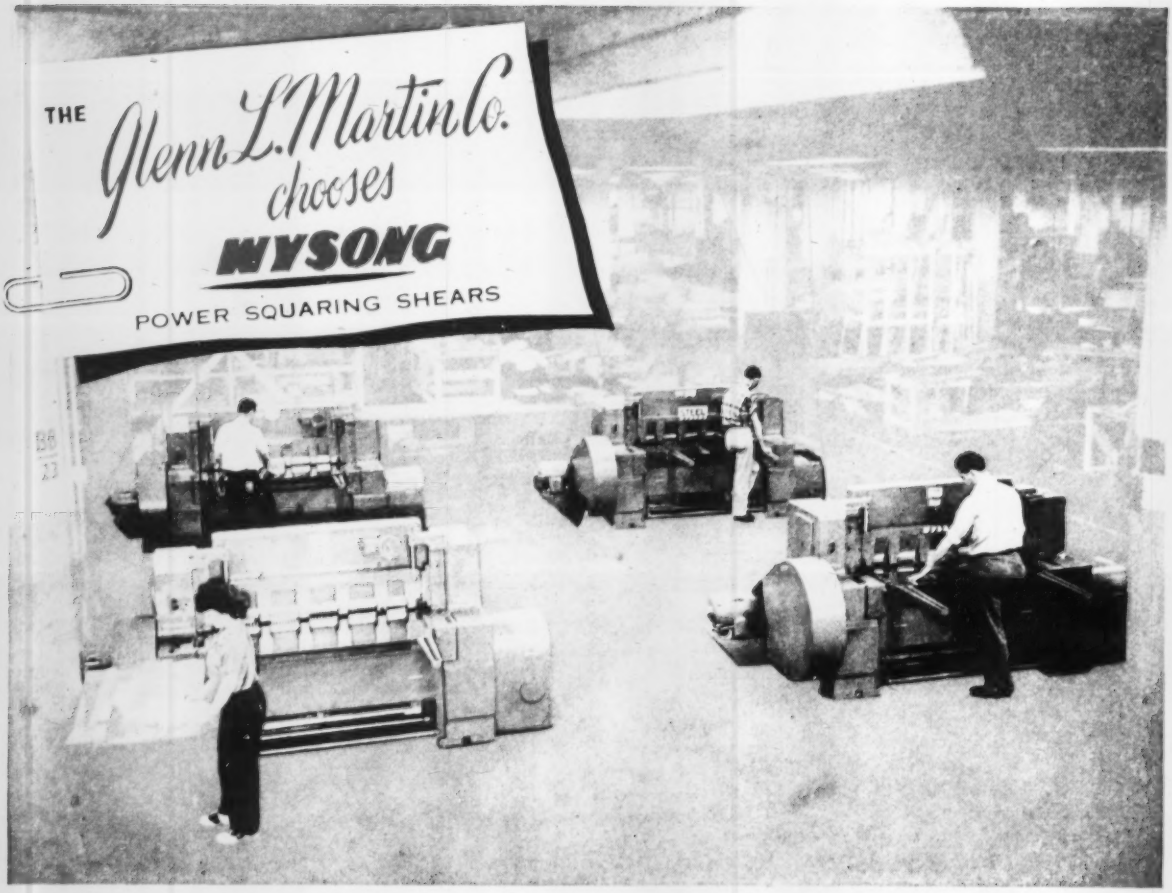

This Installation sold by Industrial Sales Co. of Washington, D. C.
Branches in Baltimore, Philadelphia, Chicago and Greensboro, N. C.

The above illustration shows four of a battery of 11 Wysong power squaring shears in the production line at *The Glenn L. Martin Company*, world famous manufacturers of aircraft. The four shears illustrated are Wysong No. 748 with a capacity of 3/16 inch mild steel and a cutting length of 48 inches.

Like *The Glenn L. Martin Company*, many nationally known firms are using Wysong shears in producing articles for defense, for transporation, and for use in daily life. The rigid construction from Hi-tensile castings gives Wysong shears a long life of accurate shearing. Precision gauges make positioning of stock quick and easy.

Wysong builds 24 different models of power squaring shears with capacities up to 1/4 inch mild steel, in cutting lengths up to 12 feet. There is a size to fit your needs.

Wysong also builds Air Power and Foot Power Squaring Shears in capacities of 18 and 16 gauge mild steel, in cutting lengths from 36 inches to 10 feet; O.B.I. Presses; Slip Roll Forming Machines; and Rotary Combination Machines. See your dealer or write to the factory for full information.

NATIONAL MACHINE TOOL BUILDERS ASSOCIATION MEMBER

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PERFECT SURFACE IS A "MUST". . .

Large drying rolls, like the one below receiving its final polishing pass, are used in "Yankee Dryer" paper-making machines which turn out soft facial tissue. Even slight surface flaws in these eight- and twelve-foot diameter castings cause them to be rejected.

So they use CHATEAUGAY PIG IRON

. . . the low-phosphorus, copper-free pig iron that has eliminated scrap losses in countless "tough casting" jobs. With CHATEAUGAY, consistently uniform "physicals" assure predetermined fine grain structure throughout every casting, regardless of size or shape.

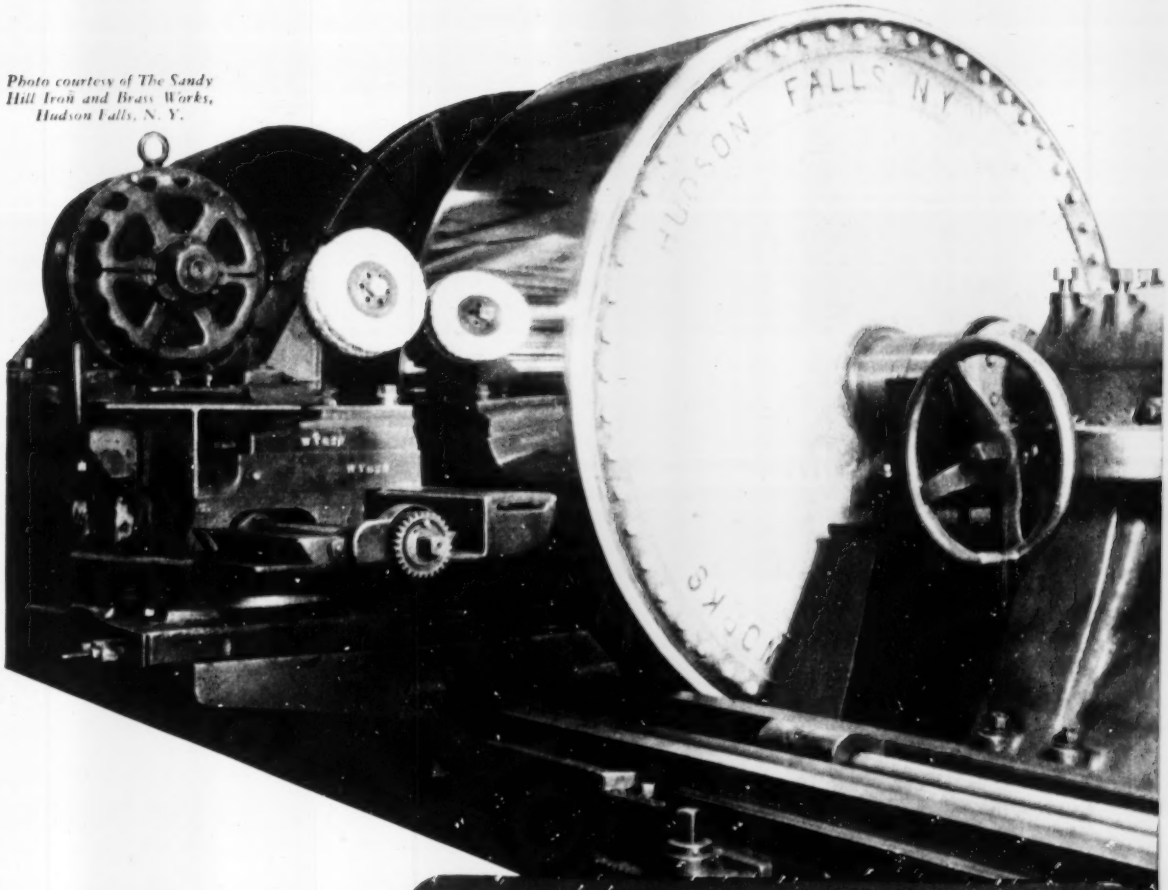
Whatever the requirements of your castings—if ordinary pig iron won't do the job—NOW is the time to investigate the *exclusive* advantages of premium CHATEAUGAY. A Republic Pig Iron Metallurgist will be glad to give you the complete facts at your convenience. Write today to:

REPUBLIC STEEL CORPORATION

GENERAL OFFICES • CLEVELAND 1, OHIO

Export Department: Chrysler Building, New York 17, New York

Photo courtesy of The Sandy Hill Iron and Brass Works, Hudson Falls, N. Y.



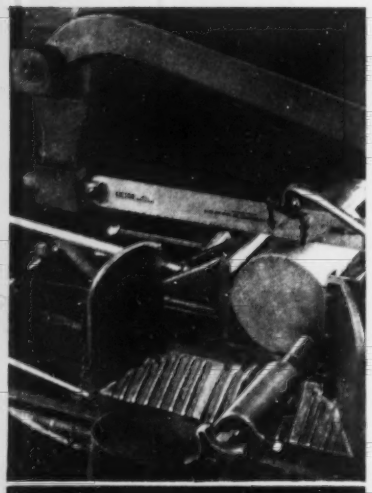
Republic PIG IRON

"CHATEAUGAY" Low-Phosphorus, Copper-Free

"REPUBLIC" (Northern) Foundry, Basic and Malleable

"PIONEER" (Southern) Foundry and Basic

REPUBLIC STEEL



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Presented as a service to machine shops, we hope some of these interesting ideas, culled from thousands of jobs, will suggest ways to help you cut time and costs in your own metal work.

SHOWS MODERN TREND IN BALANCING

Machine Balances And Corrects 100 Fans Per Hour

Today, industry *knows* the importance of balancing rotating parts, large and small. It's fast becoming a regular part of production...and *production* balancing more and more is combining the complete balancing process in *one* machine.

It's being done here:

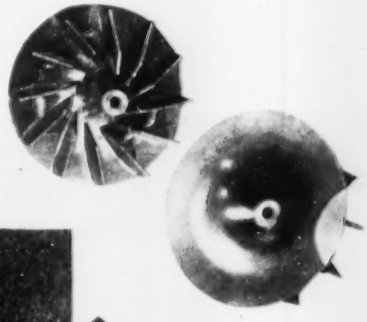
The part is a small fan for a well-known vacuum sweeper. One Gisholt DYNETRIC Balancer with correction equipment as an integral part of the machine, handles the full production—locating, measuring and correcting static unbalance at a rate of 100 fans per hour.

Locating and measuring unbalance is a matter of only a few seconds. The operator then turns the fan to the proper angle and turns a hand-wheel to correspond with the meter reading. At the press of a button, a fly-cutter removes the exact amount of metal to bring the fan into balance.

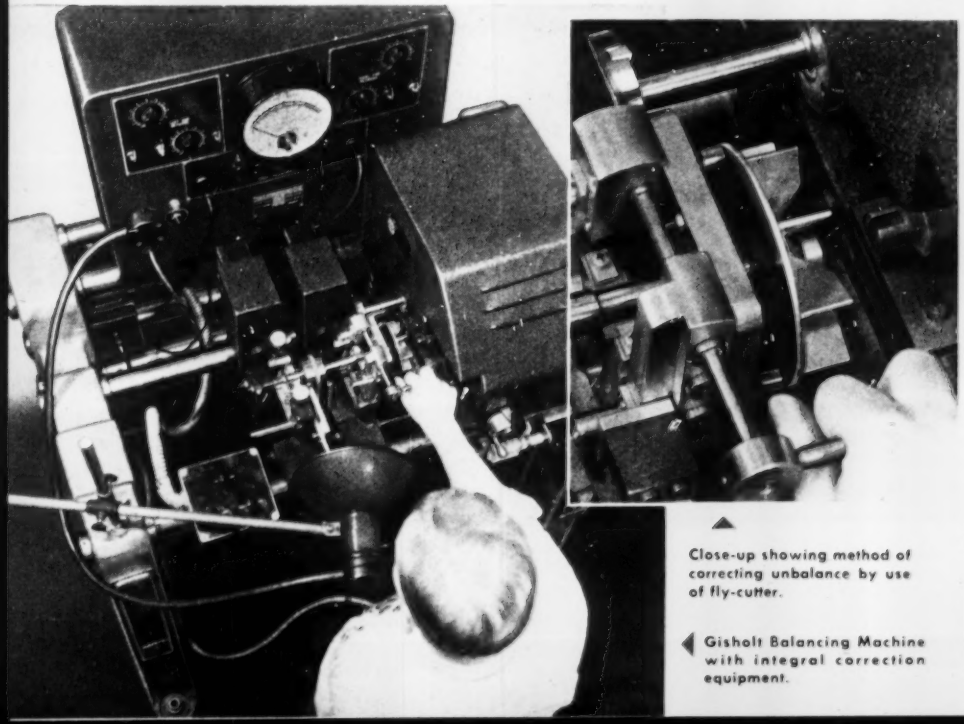
Thus, the *entire* job—locating and measuring unbalance, correction and inspection for over-all accuracy—is done in one operation. It saves handling. Only one loading is necessary.

With this entire balancing operation averaging only 30 seconds, the balancing cost is repaid many times by the greater smoothness, quietness and longer life of the fans.

DYNETRIC BALANCERS GISHOLT



Front and back of fan with metal removed to correct unbalance.



Close-up showing method of correcting unbalance by use of fly-cutter.

Gisholt Balancing Machine with integral correction equipment.

HELPFUL INFORMATION on balancing is given in the article, "Static and Dynamic Balancing" from the latest A.S.T.E. Handbook. Will be glad to mail you a reprint.

BALANCING SCHOOL.

Ask for details and starting dates of the Gisholt Balancing School, industry's only complete training program.

GISHOLT

TIME-SAVING IDEAS

HOW CAREFUL PLANNING SAVES 2nd OPERATION

Two-Stage Setup on Simplimatic Provides Answers

Here's ingenuity at work again.

This Simplimatic Automatic Lathe is making real savings in the machining of these 4½" rock bits for oil well drilling. Here's the story:

Loading—Initial alignment is very important. This is assured by a special loading fixture. The bit, complete with cutters, is loaded into the swinging air-operated cup fixture which holds it on the spindle centerline. An air-operated drawbar then pulls the loading fixture against locating stops. The chucking fixture is engaged and the piece is ready for machining.

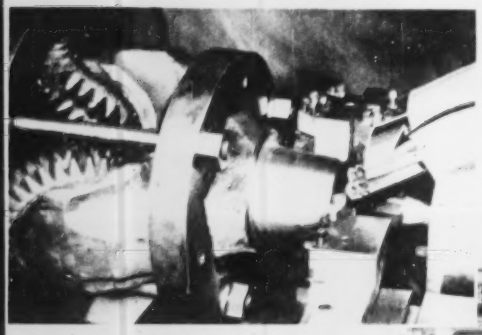
1st Stage—An angular slide moves in to center the bore. With this done, it retracts and the tailstock center comes in to support the shank for the heavy cuts to follow. All this is part of the completely automatic cycle.

2nd Stage—With the center in place, tools on the front slide taper turn the shank, which is made up of three welded sections. Tools on the rear slide chamfer and turn the face.

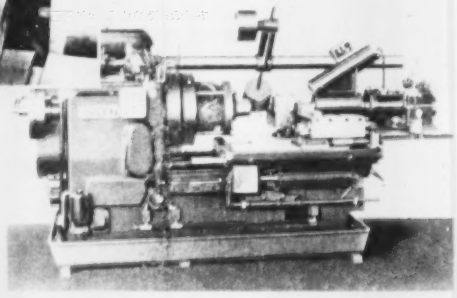
Remember, all this is done in a single automatic operation. . . and the time is only 2.25 minutes. Production-wise, this Simplimatic (which handles a number of different size bits) is producing at a rate equal to *three* hand-operated turret lathes.

The machining of these parts is reduced to a one-chucking job by the addition of a special tool slide for centering the workpiece.

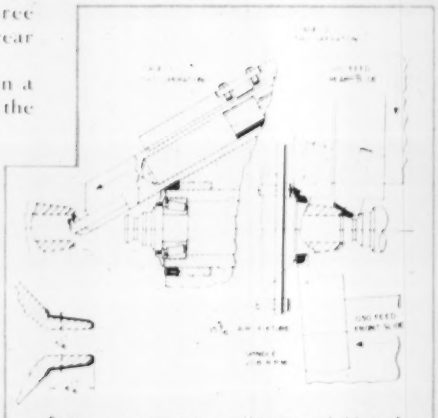
This is just one of 31 interesting jobs shown in the all-new Simplimatic catalog. Write for your copy today.



Close-up of tool slide extended to cut center in bit shank. Slide then retracts and tailstock comes in to support the shank.



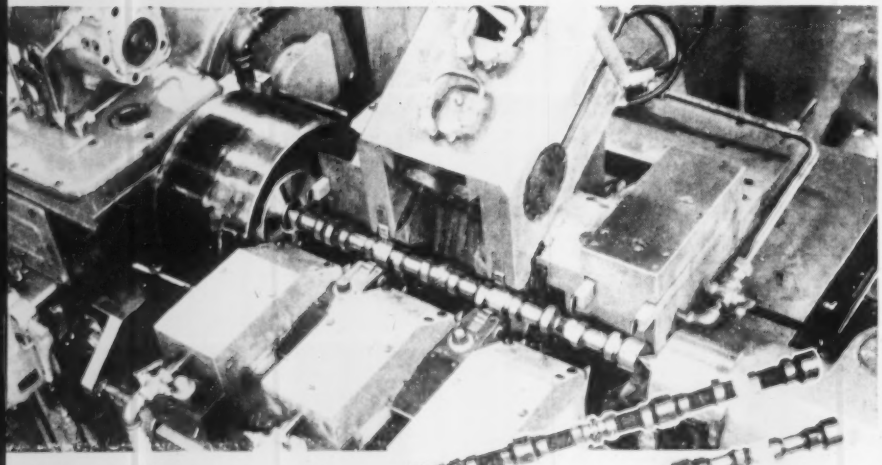
Simplimatic with special tailstock tool slide and swinging fixture for loading and unloading.



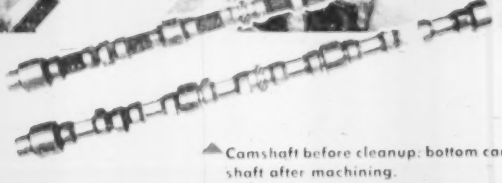
The two stages in machining rock bit and surfaces machined.

CAMSHAFTS GET QUICK CLEANUP IN THIS HIGH-PRODUCTION SETUP

Uses No. 12 Hydraulic Automatic Lathe



Tool setup for camshaft cleanup work. Note top and bottom supports.



Camshaft before cleanup; bottom camshaft after machining.

This job, cleanup operations on a six-cylinder camshaft, shows the kind of top speed, highly efficient setup demanded by the automotive industry.

A driver and center hold the forging. To give the long, thin camshafts the support required to prevent distortion and whip, there are two sets of intermediate rollers. The top rollers move in automatically before the cut is started and retract for unloading.

Slides and carriages are tied together in pairs to handle the entire length of the camshaft. The six diameters of the camshaft are turned by tools at the front. Form tools at the rear then plunge cut and clean up. Time per camshaft is 0.4 minute.

The fully automatic cycle of the No. 12 Hydraulic Lathe simplifies and speeds cleanup work on these automotive camshafts.

GISHOLT

TIME-SAVING IDEAS

WHERE C/F TURRET LATHE REALLY PAYS OFF

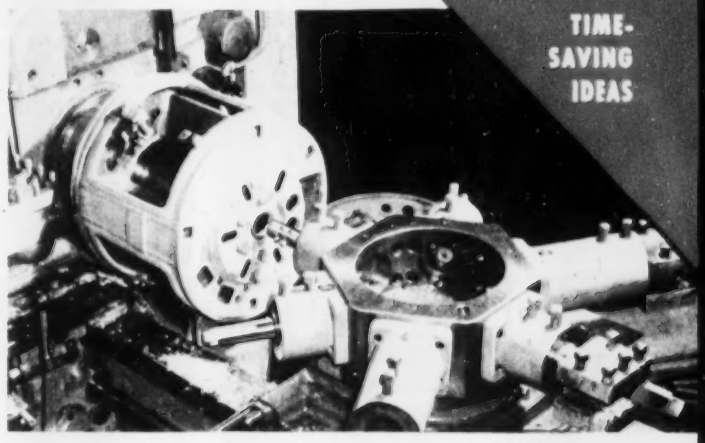
Inside Work Done with Ease

The two problems faced in the machining of these housings were (1) holding of the thin wall part and, (2) back facing the center bore. A special face plate fixture with draw-back clamps provided the careful chucking answer.

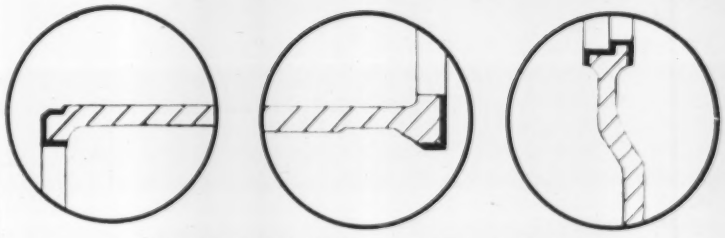
As for machining, the job might well have involved several operations with special tooling. However, the 2L Saddle Type Turret Lathe with its cross-feeding turret solved this problem. With the sliding hexagon turret, simple standard tools handle a number of different surfaces, including the back face and counterbore shown at the right in the drawing. Moreover, by doing the job in one chucking, concentricity is assured on the many different diameters.

With the cross-feeding turret, you can feed both laterally and longitudinally. Thus you can use simple tooling and can quickly change over to other types of work.

Simple tooling, plus the cross-feeding turret of this Saddle Type Lathe, add up to big savings on this interesting job.



Simple setup for machining awkward, thin-wall part.



Operations, including back facing, performed on this job.

GOOD TURRET LATHE SETUP FOR SMALL BRASS PARTS

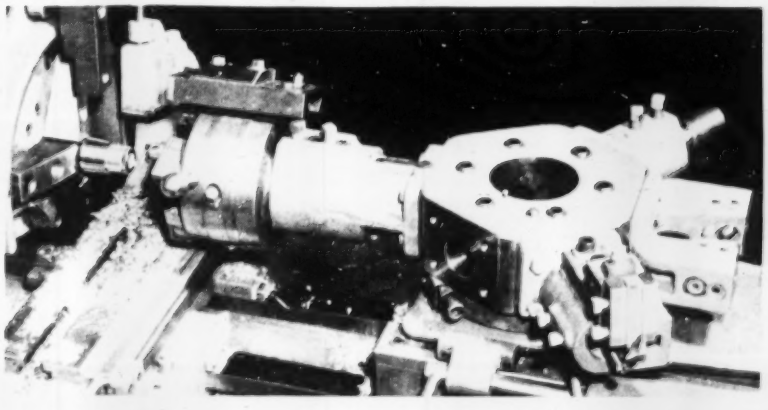
Ram Type Lathe Handles Parts in 5 Sizes

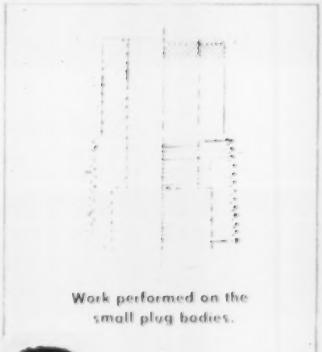
Here's a business-like setup for machining cast-brass plug bodies on a No. 5 Ram Type Turret Lathe. Held on the inside hex diameter by special jaws on an aluminum chuck, a combination turning, boring and facing tool on the first station does the bulk of the work.

Knurling follows at the next station with the required rough finish put on 450 r.p.m. The third station is merely a revolving center which supports the end while a shave tool on the rear of the cross slide forms the taper O.D. At the last station, the taper is threaded by a special self-opening die head.

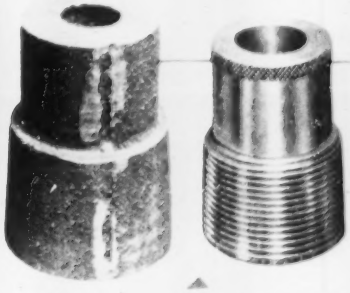
On a test run, this plug was machined in 0.84 minute, floor-to-floor. In addition, four other sizes, ranging from 1¼" to 2⅛" O.D. are handled.

This user is time ahead by a fine job of tooling and a fast ram type lathe.





Work performed on the small plug bodies.



Before and after view of cast brass plug body.

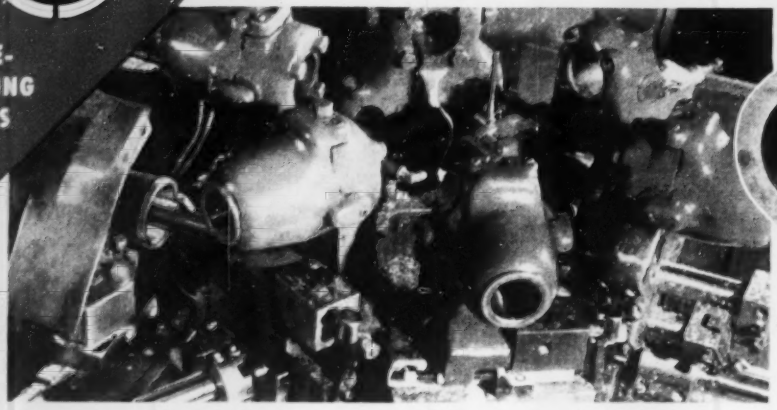
Final operation on the cast plug body is threading the taper.

EARMARK YOUR DEPRECIATION ALLOWANCES FOR NEW MACHINE TOOLS

GISHOLT

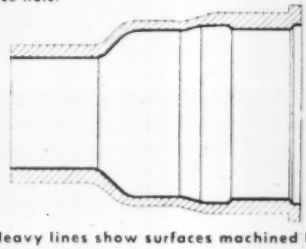
TIME-SAVING IDEAS

JOB SWITCHED TO FASTERMATIC— *PRODUCTION DOUBLED*



Before and after machining.

Simple setup for first operation on propeller nose nuts.



Heavy lines show surfaces machined by Fastermatic.

Complicated Form Machined with Ease

There was a 140% speedup in first-operation machining of these propeller nose nuts when the job went to the Fastermatic Automatic Turret Lathe. Time now is 5.0 minutes as against 12 minutes on a hand-operated machine.

The drawing shows the many surfaces to be handled. Working at five separate feeds, conventional tools rough and finish bore, turn and face. Doing the taper bore is a simple matter with the help of a turret facing attachment guided by a cam bar on the rear independent slide. A necking tool operated by an overhead stop bar does the recess in the bore.

Other advantages of the Fastermatic for this job are that no further finishing is required and its repeat accuracy has virtually eliminated spoilage.

Using standard tools, and in a continuous automatic cycle, this Fastermatic cuts tool costs and machining time in first operation work on these parts.

Good News on Deliveries! **Production has been stepped up again on 1F and 2F Fastermatics. Check your requirements with your Gisholt representative now.**

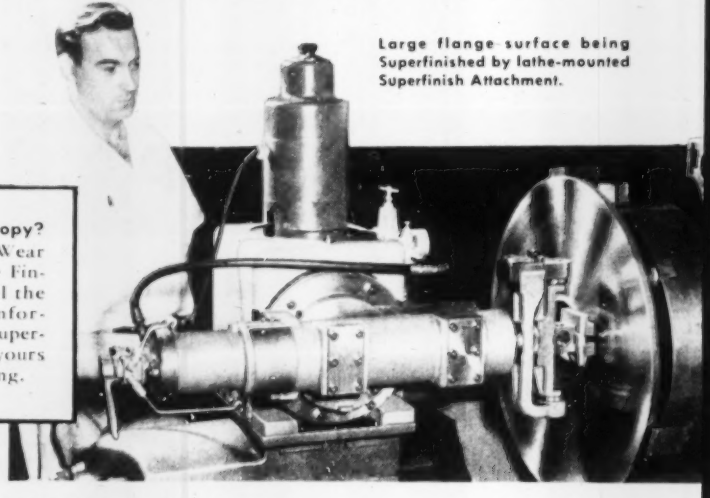
COST-SAVING IDEA FOR SUPERFINISHING

Mounts on Lathe to Provide Better Surfaces at Lower Cost

This beam flange for textile equipment is a far better product since Superfinishing has a part in its making. Yet, the investment in Superfinishing equipment is surprisingly low...the manufacturer simply mounted a Superfinish Attachment on the tool post of his engine lathe.

Formerly, the flange face was turned and then ground. Now, grinding has been eliminated and Superfinishing gives him a far better surface...in less time and at lower cost.

With a lathe-mounted Superfinish Attachment, this user is gaining important savings in grinding time while getting better, smoother, longer wearing surfaces.



Large flange surface being Superfinished by lathe-mounted Superfinish Attachment.

Have your copy? The book, "Wear and Surface Finish" has all the facts and information on Superfinish. It's yours for the asking.

No. 1-253

604

THE GISHOLT ROUND TABLE represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

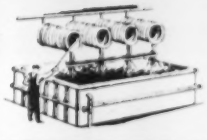
GISHOLT MACHINE COMPANY Madison 10, Wisconsin

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

For PROTECTION that fits the Job!

Specify PITT CHEM TAR BASE COATINGS

PITT CHEM 101

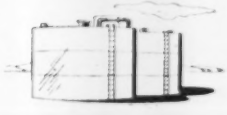


A heavy-film coating for protection of metal, masonry, stone and brick against very corrosive vapors, acid and alkali spillage and extreme moisture conditions.

PITT CHEM 102

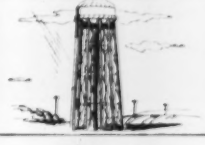
A thin, high gloss maintenance coating to protect metal and concrete surfaces against normal atmospheric corrosion, mildly corrosive vapors and moisture.

PITT CHEM 103



A heavy duty general maintenance coating for moderately severe corrosive conditions like dilute mineral acids, alkalies, sewage, moisture and corrosive vapors.

PITT CHEM 104



Specifically formulated to protect potable water tanks and water transmission equipment. Dries very quickly and imparts no taste or odor to potable water.

PITT CHEM 105

An irreversible, fast drying coal tar emulsion which provides excellent corrosion resistance on metal, concrete, brick and stone.

W&D 4430

Write For FREE Corrosion Control Booklet

Tells where tar base coatings can save you money in your plant . . . what grades to use . . . how to apply them.

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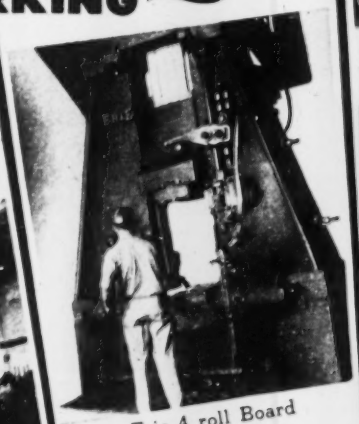
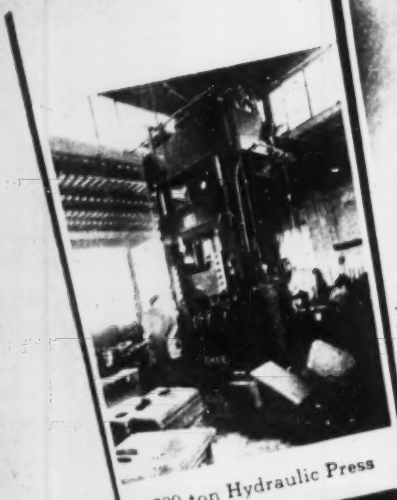
DIVERSITY OF EQUIPMENT for METAL WORKING

Erie 25,000 lb. Steam Hammer

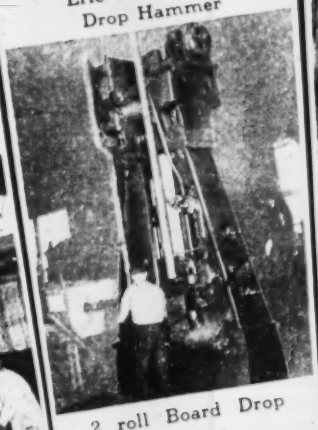


Erie 4 roll Board Drop Hammer

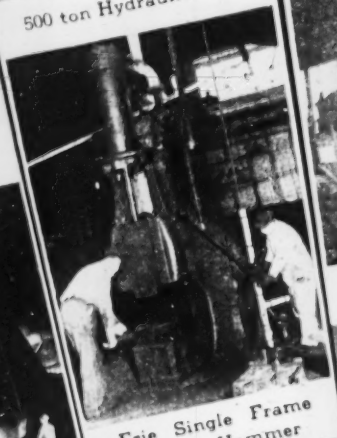


500 ton Hydraulic Press

Erie Trimming Press

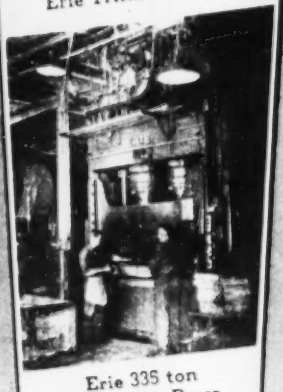


2 roll Board Drop Hammer



Erie Single Frame Forging Hammer

Erie Double Frame Forging Hammer



Erie 335 ton Hydraulic Press

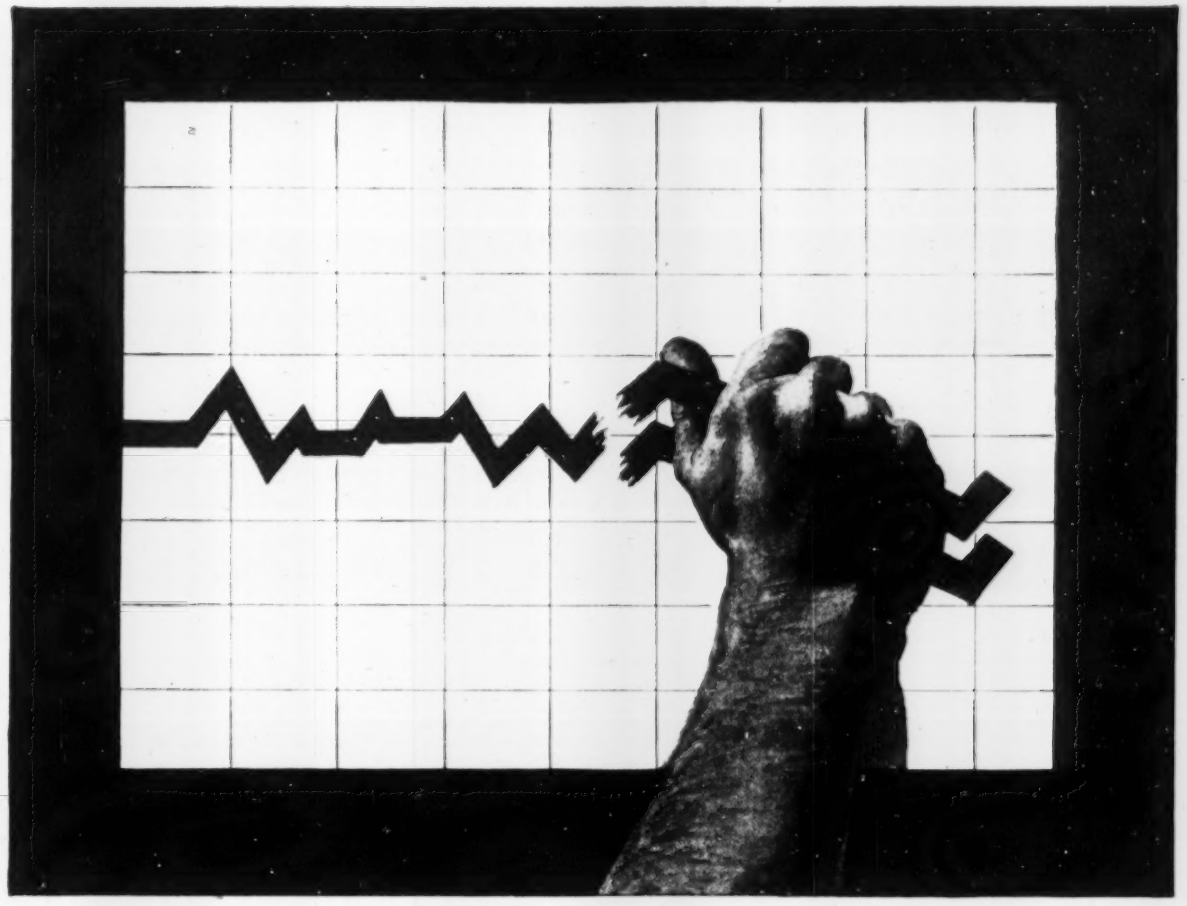
FOR more than half a century Erie Foundry Company has served the metal-working industry with top performance steam and air operated hammers, board drop hammers, double and single frame forging hammers, trimming presses and hydraulic presses. Before making your selection consult with our engineers.

Bulletins on all of these products are yours on request.

ERIE FOUNDRY COMPANY ERIE, PENNSYLVANIA

ERIE

Dependable **FORGING HAMMERS • HYDRAULIC PRESSES**



How much tonnage does your down-time steal?

EXCESSIVE down-time for bottom repairs steals precious production time—time when your furnace should be making steel!

You can cut costly repairs, greatly increase your tonnage per year, when you install a bottom of Permanente 165 *periclase* ramming mix.

Bonded by means of crystal-bridging, patented Permanente 165 begins formation of a ceramic bond as low as 1500° F and gives a *deeper bond* at normal burn-in temperatures—with no formation of fluids.

Because Permanente 165 has a higher MgO content, *higher refractoriness* is retained longer under operating conditions. *High density* is insured by accurately-sized, pre-shrunk periclase grains.

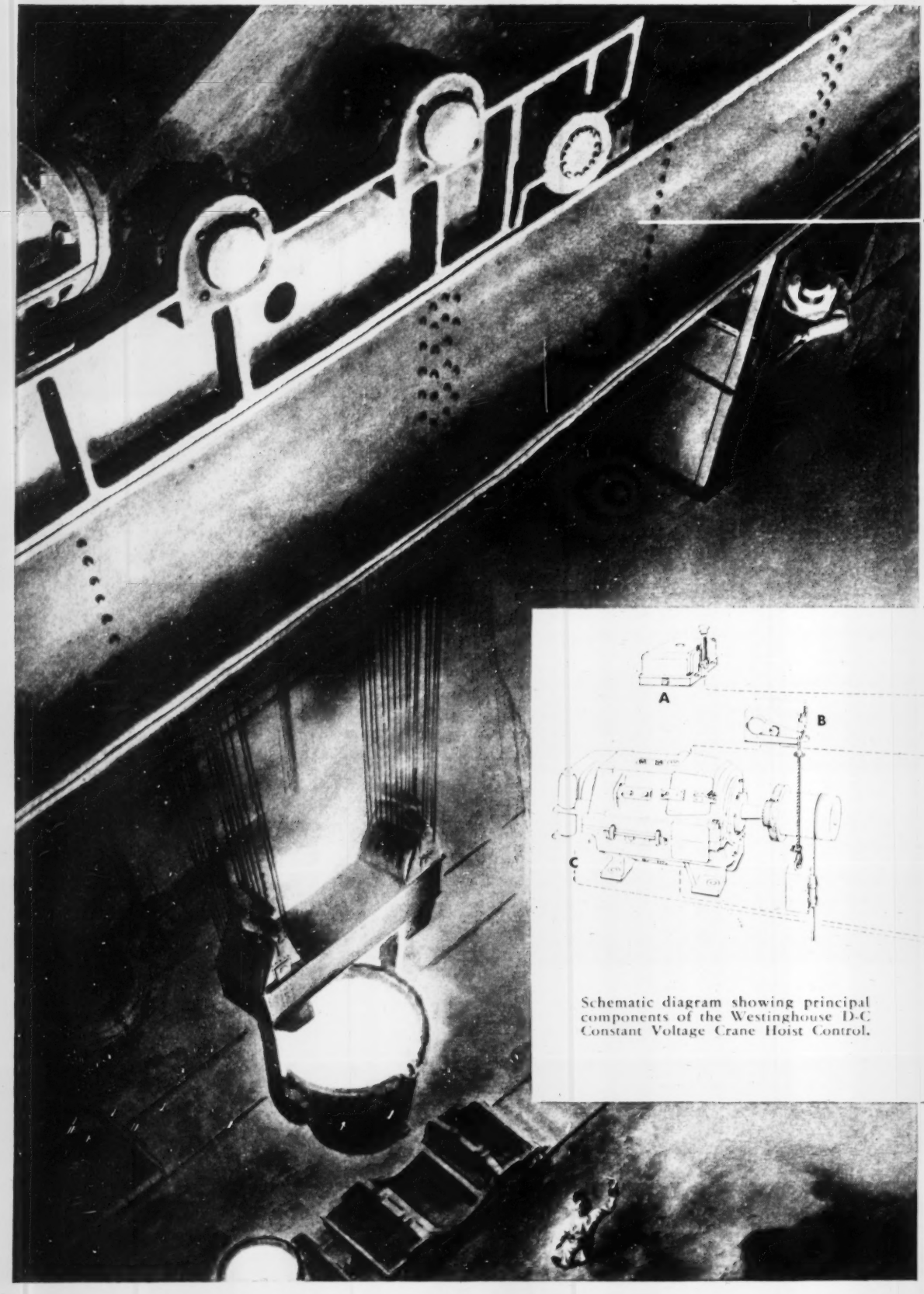
This means you get a better bottom that requires less time and materials for repair, with far less danger of costly breakthroughs.

YOUR Kaiser refractory engineer will give prompt attention to your refractory problem—will offer, where desired, research, design and installation service to give you maximum production most economically. Write for descriptive literature on Permanente 165 and on the companion ramming mix, Permanente 84. Principal sales offices: *Chemical Division*, Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, California. First National Tower, Akron 8, Ohio.

Kaiser Chemicals

Pioneers in Modern Basic Refractories

Basic Refractory Brick and Ramming Materials • Dolomite • Magnesia • Magnesite • Alumina • Periclase

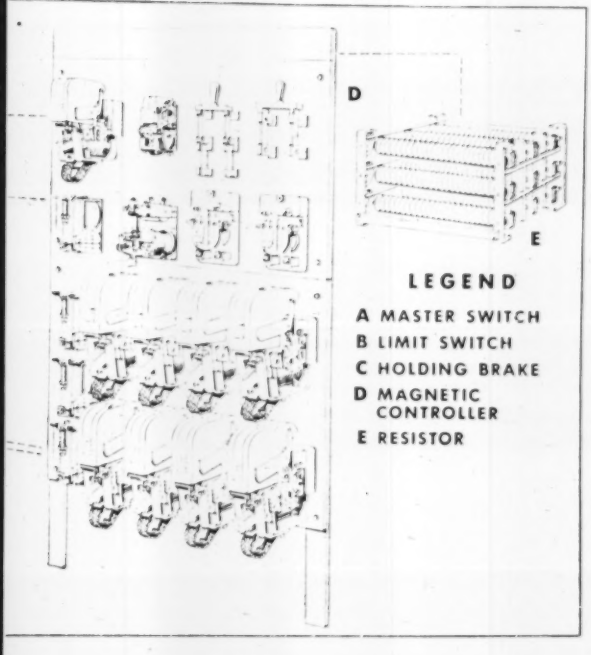


Schematic diagram showing principal components of the Westinghouse D-C Constant Voltage Crane Hoist Control.

MILL RATED muscle for heavy hoisting

Steel mill crane hoist control must have the stamina to take ceaseless beatings. It must be built of components that are mill rated . . . that keep functioning regardless of exposure to dust, dirt, heat, cold and round-the-clock hard service.

The Westinghouse D-C Constant Voltage Crane Hoist Control meets these requirements. It is built to stand up to the daily abuse found in most steel mill operations. Heavy-duty, mill-type electrical equipment is used throughout. The Type M contactors and series-wound, 600-series, d-c motor are mill rated. Dependable operation is further assured by the basic simplicity of the control system.



OPERATING CHARACTERISTICS ARE COMPLETE AND FLEXIBLE

Loads Slip Into Place due to proper proportioning of speed increments between master switch points and selection of correct resistor connections.

Slow-Speed Hoisting Is Available with empty hook. In lowering, suitable kickoff torque is obtained with careful resistor design enabling the motor to reach steady-state speed quickly without overshoot.

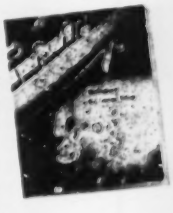
High Lowering Speeds Are Available when required. The high-speed lowering point has an independent adjustment to facilitate closer control at these high speeds.

Standard Control Panel contains only nine contactors and four timing relays in addition to protective equipment. All are front mounted for easy accessibility. All are standard units.

New Heavy-Duty Contactors and a combined control system and resistor design, that prevent excessive current peaks during transitions or while plugging, prolong equipment life.

Get this Descriptive Booklet B-5420

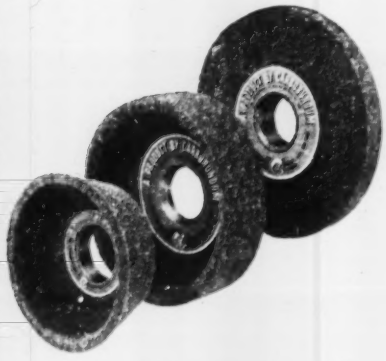
Full descriptive information on all components of the Westinghouse D-C Constant Voltage Crane Hoist Control is contained in this free booklet. Your Westinghouse representative has a copy for you. Or, you can get a copy by writing direct to: Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-27017-A



YOU CAN BE **SURE**...IF IT'S

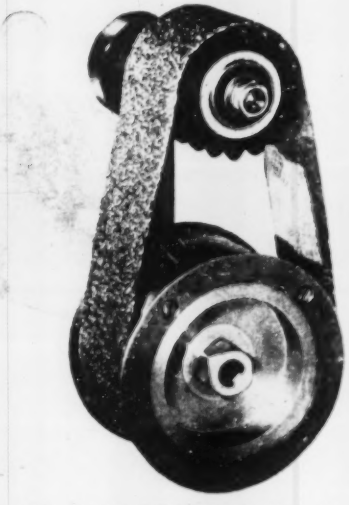
Westinghouse

2 pages of HELPFUL COST CUTTING IDEAS for YOU



"GREEN-GRIT" silicon carbide wheels in vitrified bond put keen edges and fine finishes on carbide tipped tools—to close tolerances. Recommended gradings for offhand and surface grinding, wet or dry: rough, GC60 H11-VR; finish, GC100 G5-VR.

NEW RESILIENT FEED WHEELS prove ideal in centerless grinding of armatures and other work requiring light but even pressures. Wheels are standard A-80-R2-R grading, with specially designed resilient rubber center. They'll save money for every centerless user.



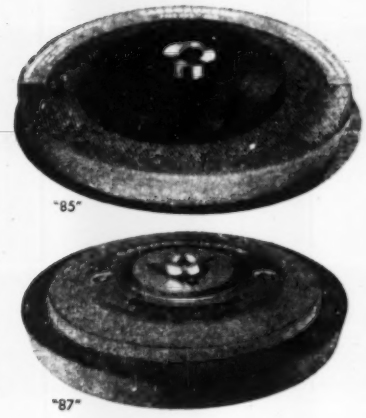
NEW "PORT-A-BELT" Grinding Attachment quickly converts any horizontal portable grinder to a belt grinder. It's light—compact—easy to attach. It's a natural for any metalworking shop concerned with die and mold grinding, weld cleanups, edge breaking, contour finishing. Often eliminates 2 or 3 operations.

NEW R3 (Rubber) BOND RACEWAY WHEEL lowers costs in the bearings industry. It cuts cool, holds form—reduces regrinds and rejects. One wheel often replaces tandem mountings. You'll get far more output per wheel, too.

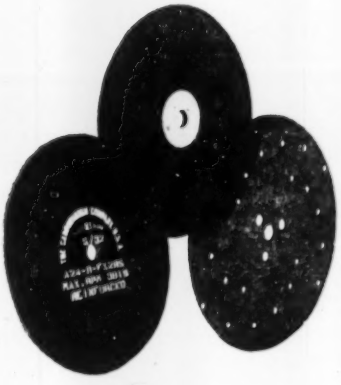
...from CARBO

TRADE

"Carborundum", "Aloxite", "Green Grit", "Red I Cut", "Fastcut", "Port-A-Belt", and "MX" are trademarks of The Carborundum Company, Niagara Falls, New York



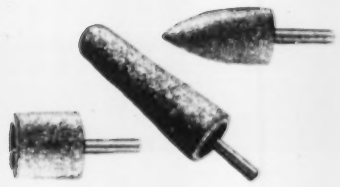
"FASTCUT" Pad 85 Assembly now permits *wet* sanding with discs, a brand new finishing method that gives better finishes in far less time. Complements the "FASTCUT" Pad 87 Assembly for dry disc sanding—another cost-cutter for you!



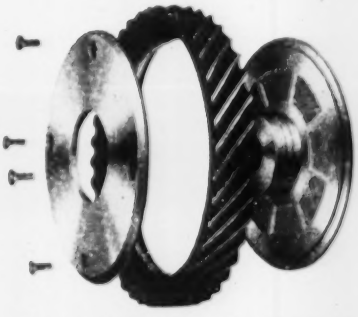
Abrasive **CUTTING OFF WHEELS**—from 12 to 20 times faster than steel saws—produce smoother cuts at lower cost than other, conventional, methods. Rubber bond for wet cut-off, resinoid bond for dry, "MX" for free hand . . . CARBORUNDUM makes the *right* wheel for any metallic or non-metallic cut off job.

"RED-I-CUT" Waterproof Paper has revolutionized wet sanding operations in thousands of shops. With its new flexible backing and a new resin bond, you can confidently expect it to deliver a faster cut, a better finish, and up to 50% longer useful life on production runs.

RUBBER BUSHED WHEELS, used with rubber washers, are being widely adopted because they reduce vibration to a minimum in portable grinding. Results: less operator fatigue, greater output and longer wheel life. Every user of portable equipment should investigate these cost-cutting wheels.



V1 BOND, outstanding performer in internal grinding, is now saving money for users of mounted wheels and points. Why? They last longer, cut faster, hold form better, because V1 Bond is stronger, free-cutting. And for quality of finish obtained, they're unsurpassed.



"T-61" UNIVERSAL HUB CONTACT WHEEL ASSEMBLY now combines economy of longer belt life, achieved by serrated wheel surface, with equally sharp saving in wheel replacement cost. Changeable "tire" idea multiplies wheel versatility too. Hundreds of abrasive belt users are enthusiastic about results.

You profit when you STANDARDIZE on Abrasives by CARBORUNDUM

When you do business with the *only* supplier of all the types of abrasives there are, certain unique advantages are yours to enjoy:

FIRST, a control of abrasive quality which is constant, identical, and dependable—no matter what abrasive method you use.

SECOND, a technical advisory service which brings to your attention every new development in the entire field of abrasives.

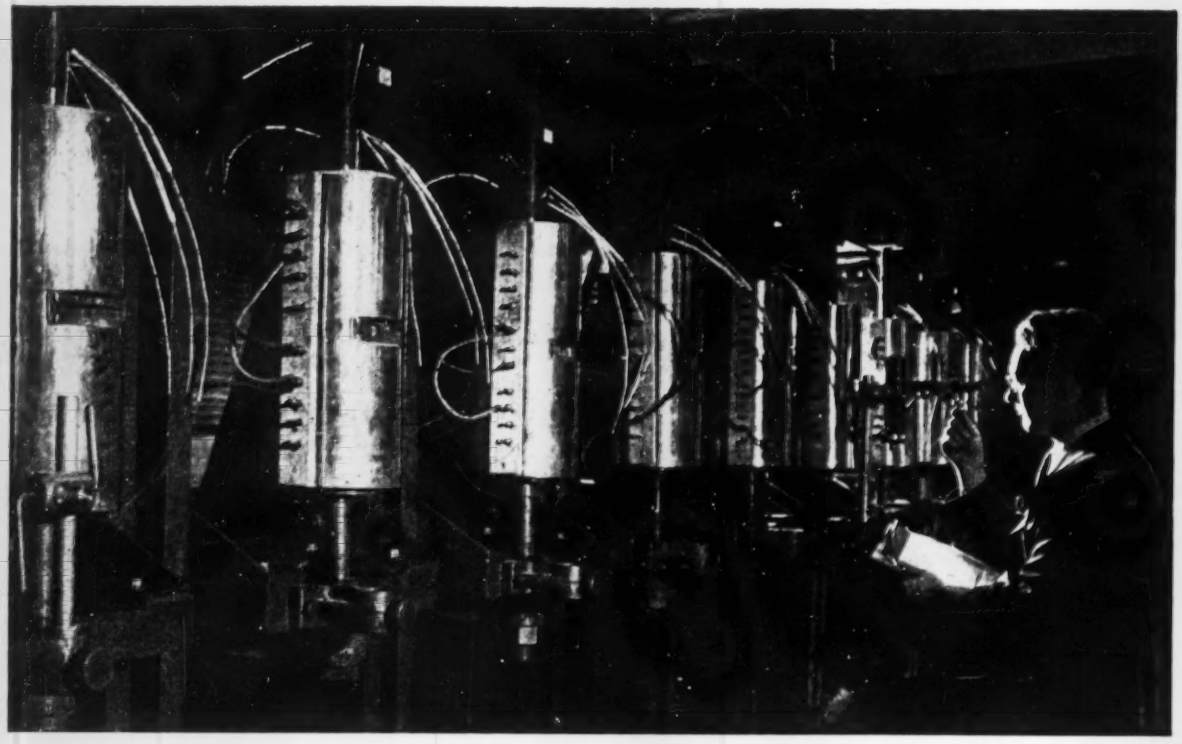
THIRD, a refreshing approach to your abrasive problems which only a complete-line source, assuming complete-line responsibility, can offer. Recommendations from CARBORUNDUM are free from bias, completely objective . . . thus entirely dependable.

For further information on any of the ideas shown here, call your CARBORUNDUM salesman or distributor, write Dept. S 80-31

RUNDUM

MARK

. . . the ONLY source for EVERY abrasive product you need



Where Metals Give Up Their Secrets

Suppose you want a metal to combat some particularly destructive set of service conditions.

Here's a man who can help you.

He's one of INCO's staff of engineering specialists and metallurgists. His primary responsibility is to determine how well a material qualifies for its intended use.

Often, he can find an answer to your problem among the metals and alloys he works with daily. He can tell you which of the INCO Nickel Alloys offers the most promising answer to your problem—and he can tell you just as frankly when a problem is outside the known scope of what the INCO Nickel Alloys can do.

Suppose, for example, you were caught in a predicament where you had to find a corrosion-resisting material with greater strength and hardness than you can get even in Monel®. He can name you an age-hardenable alloy that has the same excellent resistance as Monel *plus* mechanical properties you would expect to get only in a heat-treated alloy steel. Non-magnetic, too, down to −150° F. below zero. It is "K"® Monel, one of the INCO Nickel Alloys.

Maybe high temperatures complicate your problem. In that case he would study the service conditions and weigh out all the possible answers to your problem. Inconel "X"® is just one of a number of heat-resisting INCO Nickel Alloys that include Inconel®, the Nimonics, and the new Incoloy®—each one with different characteristics that make it best suited for different types of high temperature problems.

Remember this man. He can tell you where nickel alloys may safely be used to replace others containing even more critical metals. He can save you a lot of trial-and-error experimentation.

If you are wrestling with any problem that involves metals, let him lend a hand. There's no charge, no obligation. If one of the INCO Nickel Alloys cannot solve your problem, he may be able to recommend another metal that will. A note to "Technical Service" at this address will receive prompt attention:

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

Inco Nickel Alloys

MONEL® • "R"® MONEL • "K"® MONEL • "KR"® MONEL "S"® MONEL • NICKEL
LOW CARBON NICKEL • DURANICKEL® • INCONEL® • INCONEL "X"® • INCOLOY® • NIMONICS®

STEEL

The Metalworking Outlook

January 12, 1953

The Budget: It Will Be Cut

Mr. Truman's budget request for $78.6 billion in fiscal 1954 will be unrecognizable by the time the new Congress and the Eisenhower administration get through with it. The general will let Congress know about his fiscal ideas beginning in April when he plans to send a series of budget messages to the legislators. His first full budget won't come until a year from now. The major changes in the Truman budget requests will be toward cutting it to meet the estimated $68.7 billion in tax receipts.

Decontrol Pressure Mounts

Nor can you expect the new administration to act hastily on decontrol of materials, wages and prices. That's despite ever-mounting pressure for such action. The latest comes from the House Small Business Committee (82nd Congress) which urges that CMP for steel be dropped Mar. 31 instead of June 30, the date most Washington defense planners now favor. The group recommends that a program to end wage and price controls be worked out promptly.

Bare-bones Economy

Civilians will live in a bare-bones economy if we get into another world war. That is the condition on which the Office of Defense Mobilization is predicating its plan for creation of a full mobilization base (pp. 43, 45). Defense Boss Henry H. Fowler points out that in World War II the U.S. never devoted more than 45 per cent of its economic strength to fighting the war. The United Kingdom got up to 50 per cent and Germany for a time stood at 55 per cent. What the U.S. percentage would be in case of another war, Mr. Fowler refuses to estimate, but the inference is that it will be much higher than 45 per cent.

More Stockpiling

The national stockpile of 75 strategic materials has reached only slightly more than half its current objectives. Even so, the dollar value of materials on hand has almost doubled—rising from $2.1 billion in mid-1950 to $3.8 billion at the end of 1952, after adjusting for price changes. As the materials supply situation improves in 1953, stockpiling will increase. That means no slack in demand for any of the 75 materials is likely to develop over the coming year.

On the Road to More Highways

Structural steel allotments to road builders this spring will permit "the highest rate of highway construction ever experienced in the U.S." DPA said that in a breakdown of its 1,692,000-ton allocation of structural steel for the second quarter. Highway contractors get 185,000 tons, 68 per cent more than they got in the third quarter of 1952. They'll need that much and more. Besides the paved roads and streets of America that must be rebuilt and the new ones required,

Production Engineering News p. 65 The Market Outlook—p. 97

half of the nation's 3.3 million-mile highway plant is still unpaved.

Canadian Prospects Promising

Watch for the Canadian boom to continue in 1953. Total capital investment in 1952 was $5.2 billion, 8 per cent over the 1951 volume, and it's expected to climb still more over the coming year. Canada's exports will also probably rise. In the first nine months of 1952, the dominion's shipments to countries other than the U.S. showed an increase of 34 per cent over the like period of 1951.

Working Capital: Too Low?

Working capital of U.S. corporations is increasing, but the continuing inadequacy of capital is considered the number one problem facing credit and financial executives in 1953. A survey by the National Association of Credit Men shows that even taxes ranks second to the problem of capital positions of many companies. Corporate net working capital was an estimated $86.9 billion as of last Sept. 30. The increase from last June 30 exceeded $1.2 billion.

Industrial Property Prices Hold

You can anticipate stable prices and continuation of the current rate of sales for industrial property during the next six months. So predicts the National Association of Real Estate Boards. In a survey of the boards, some 75 per cent expect prices on one and multiple-story industrial structures to remain steady for the next six months; only 6-10 per cent forecast lower prices.

Straws in the Wind

David J. McDonald will be unopposed in a Feb. 10 election as president of the United Steelworkers, but look for lively contests in the voting for district directors . . . National Securities & Research Corp. predicts a $1 billion increase in 1953 corporate net earnings to bring the total to $18.5 billion . . . Export-Import Bank has approved a loan of $67.5 million to Industria E Comercio De Minerios of Rio Janeiro—in which Bethlehem holds a partial stock interest—to enable production of 5.5 million tons of high-grade manganese ore on a Defense Materials Production Administration contract running to June 30, 1962 . . Republic Steel Corp.'s Berger Mfg. Division spent $1 million on retooling to enter the steel kitchen market whose potential is estimated at $200 million yearly . . . Colorado Fuel & Iron Corp. paid a reported $23 million for Roebling's.

What Industry Is Doing

Delivery dates will improve in 1953 (p. 37) . . . Tool and die firms expect to continue this year at the $700 million level they achieved in 1952 (p. 38) . . . The Department of Commerce sees a continuing high economy that will push gross national product to $365 billion in 1955, compared with $350 billion expected this year (p. 39) . . . National Securities Resources Board approves of most of the Paley report recommendations on materials utilization, and the joint study may serve as the basis for Republican policy (p. 40) . . . Gage deliveries improve, but a shortage still exists (p. 41).

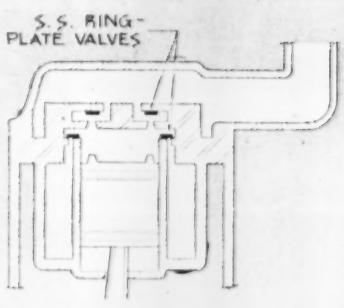
A ring plate type valve for freon compressor made of Armco 17-7 PH Stainless Steel strip.

"17-7 PH"

Here is how the ring-plate type valve is mounted and held in its retaining plate.

Replaces Carbon Steel In These

Ring-Plate Valves



This is the way the simple and efficient ring-plate valves operate in the compressor.

In a well-known line of freon compressors, Armco 17-7 PH Stainless Steel has proved its superiority for ring-plate valves and now replaces the carbon steel formerly used.

For these rings Armco 17-7 PH strip, 0.040-inch thick, is purchased in the cold-worked condition. After blanking, only a single low-temperature heat treatment is required for the desired hardness, since cold-working has already transformed the material. Resulting yield and tensile strengths are very high.

This is another case where physical characteristics and low-temperature heat treatment of this precipitation-hardening stainless steel produce a better product in fewer operations. Line check-valve plates and pump-valve discs are among other related applications that have been found most successful.

Two PH Grades

Armco 17-7 PH is made in sheets, strip, plates, bars and wire. Single and double low-temperature heat treatments are employed in hardening. There is also a special bar and wire grade, Armco 17-4 PH, that requires only a single low-temperature heat treatment. If you need good corrosion resistance and high strength combined with ready workability, investigate these two Armco Precipitation-Hardening Stainless Steels. Just a post card will bring you complete information.

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BIG Magnet *Pays Off* with BIG Lifts

TYPE SW ALL-WELDED LIFTING MAGNET HAS THESE IMPROVEMENTS

1. Leads protected at magnet-end.
2. If damaged, outer leads replaceable without entering terminal-boxes.
3. Solderless clasp-type connectors.
4. Stronger welds — 2 to 5 times stronger.
5. ECAMICA board (new EC&M development) insulates coil layers.
6. New, purer asbestos, strengthened by EC&M No. 281 impregnation, insulates between turns.
7. Coil windings locked against movement.
8. Thicker pole shoes with high shoulders.
9. Stronger manganese bottom plate.
10. Two terminal chambers — coil-leads on outside of coil.

"Best Magnet We Ever Had and We've Had Lots of 'Em!" That's what Abe Knofsky, Warren Scrap Iron and Metal Co. of Warren, Ohio, says . . . also, "Its greater lifting capacity means *quicker lifting* and *lower cost per carload.*"

This company uses a 55-inch Type SW Magnet, on a 30-ton Browning Crane and Shovel Type ML-300 Crane with 60-foot boom, for loading various kinds of scrap into railroad cars.

EC&M *Improved Design* Type SW ALL WELDED Magnets give *greater lifting capacity per dollar invested.*

IT WILL PAY YOU TO INVESTIGATE THEM

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Truman's Seven Years

President Truman's state-of-the-union message to Congress last Wednesday differs from its predecessors in several respects. It was read by clerks instead of by the President. It contained no recommendations to Congress, as had previous messages. Instead of covering the events of a single year, as had been customary, it spanned all seven years of Mr. Truman's custodianship.

In this respect it probably was intended to be a valedictory address. From the evident care with which it was written, it is reasonable to assume that Mr. Truman hopes that it will stand as a historical account of the accomplishments of his administration. If, as has been suggested by some critics, the President has stressed the good points and left out the bad ones, that is his right.

In the future, when the events of Truman's seven years can be appraised more dispassionately than is possible today, debate probably will center upon the manner in which the administration dealt with various crises which confronted it. For instance, would more intelligent action in the Far East in 1946, 1947 and 1948 have prevented the attack on South Korea in 1950? Would or would it not have been possible during Truman's years to scale down the national debt more than has been done?

Also, was there any valid excuse for permitting the purchasing power of the dollar to slip from about 72 cents when Mr. Truman assumed office to less than 53 cents when he steps out? In view of the great cries that have emanated from Washington during the past seven years for more power and money for the President to enable him to combat inflation, one is almost forced to conclude that use of these powers and funds actually contributed to the decline of the purchasing power of the dollar. Eventually history will provide answers to these and other questions.

Meanwhile, a new administration will take over on Jan. 20 and will try to apply solutions to some of these problems which the old administration either ignored or failed to solve. The nation eagerly awaits new thinking, new leadership and new action.

E. C. Shaner

EDITOR-IN-CHIEF

IS FTC BOONDOGGLING? On Dec. 24, 1952, the government issued a 157-page document entitled "Report of the Federal Trade Commission on the Control of Iron Ore for the Antitrust Subcommittee of the Committee on the Judiciary of the House of Representatives." It goes into great detail as to the iron ore holdings of United States Steel, Bethlehem, Repub-

lic, Jones & Laughlin, Youngstown, National Steel, Inland, Armco and Wheeling. It also describes the operations of Cleveland-Cliffs, M. A. Hanna, Butler Bros., Pickands Mather and Oglebay Norton.

In its summary, the report states that "the open market is virtually absent," that the ore merchants today are primarily managing agents and that "most of the residual ore that remains after distribution on the basis of ownership ties is committed to long-term contracts well in advance of production. Much of this contracted ore goes to the nine major and a few of the smaller integrated companies. The spot market is a thing of the past."

If this means that FTC thinks there is a monopoly in iron ore and that a small operator seeking ore would have difficulty obtaining it, then the report is far-fetched. That FTC went to all the trouble to make this report makes one wonder whether it lacks enough real work to keep it busy.

SCRAP MEN CONFIDENT: Early this week members of the Institute of Scrap Iron & Steel Inc. in annual convention are observing the silver anniversary of its founding. On this occasion they can be proud of the excellent manner in which their institute has served the nation during the past quarter-century and of how the scrap industry has met crisis after crisis during this period.

Fortunately the anniversary comes at a time when steel mills are fortified with a 6-million ton stockpile of scrap, the largest in years. But scrap people are not complacent (Insert following p. 44). They realize that demand in 1953 may be unprecedented. To provide "more scrap for more steel" will be a constant challenge to them as they go into the second quarter-century of their institute's activity.

OFF TO A FAST START: Business is entering the new year with more vigor than was the case a year ago. This publication's index of industrial activity for the week ended Jan. 3 (p. 55), stands at 207 per cent of the 1936-1939 average, compared with 187 per cent in the corresponding week a year ago.

Steel output in the week ended Jan. 10 was 2,213,000 tons a gratifying tonnage. Electric power output is up about 6 per cent from that of a year ago. Revenue freight car loadings exceed last year's volume by 7 per cent. Automobile production in the week ended Jan. 3 was more than double that of the comparable 1952 week and in the week ended Jan. 10 it was 15 per cent ahead.

This early vitality is encouraging. It reflects a continued buoyant demand and a psychological uplift generated by faith in the incoming administration in Washington.

REWARD FOR INGENUITY: In discussing recent progress in the development of porcelain enamel coatings, W. S. Barrows, president of Barrows Porcelain Enamel Co., suggests that ingenuity is an important factor. Although progress has been accelerated by marked improvements in techniques and in the coatings themselves (p. 72), it has been the ability of enamel operators to overcome baffling difficulties by dint of hard experience that has brought the industry to its present status of accomplishment. Numerous coating applications that were considered "impossible" only a few years ago today are routine operations.

This improvement is timely because it places the porcelain enamel industry in a strong position to cope with problems thrust upon it by the nation's jet engine program. Porcelain enameled combustion chambers for jet engines are successfully withstanding the tremendous thermal shock resulting from a shift in temperature from 1800 F to 60 F in a few seconds!

OUR VULNERABLE SPOT: An incongruous aspect of our nation's accomplishments is that with all of our successes in organization, management, technology, etc., we still are backward in operating ships on the high seas. John A. Penton, founder of the company which publishes this periodical, spent a lifetime crusading for an American merchant marine worthy of the name. He met with rebuff after rebuff.

Today the government's negotiations as to the amount of subsidy to be granted in the cases of the *S. S. Independence*, *Constitution* and *United States* (p. 42), may have an important bearing upon the future development of American shipping. Judging from past experience and from present attitudes, many years may pass before we evolve a sound merchant marine policy.

Whose cheese is being divided?

TWO cats could not agree on fair division of a tasty cheese. "Let's go to the monkey," said one, "He is all-wise and can divide our cheese fairly." So to the monkey they went.

The monkey immediately broke the cheese evenly and judicially put the two pieces on the pans of his balance. But one was slightly heavier. He shrewdly nibbled that piece a bit and put it back on the scales. Now it was the lighter piece. So he bit off some of the other piece only to find it the lighter. Thus while the two hungry cats watched, the monkey kept taking bites of the cheese, first one piece, then the other, until finally the cheese had almost disappeared.

"What's left is too small to divide," sagely pronounced the monkey, as he popped the remaining fragments into his mouth.

Observers of the American scene see a direct parallel between the record of federal taxation and this ancient parable of the trusting cats, the greedy monkey and the cheese. Business and the individual citizen have been content to trust government to rule on the disposition of their earnings. And Uncle Sam keeps taking bite after bite out of the shares of both individual citizen and business.

Already government bites are so large as to severely penalize citizens and business alike. If allowed to continue, it will seriously impede further industrial progress and growth, stifle initiative and threaten the strength of our free enterprise system. Beware the day—goal of the socialists among us—when the monkey says, "What's left is too small to divide."

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RAILROAD TRACK SPIKES - CONDUIT - HOT AND COLD FINISHED CARBON AND ALLOY BARS - PIPE AND TUBULAR PRODUCTS - WIRE - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - RODS - SHEETS - PLATES.

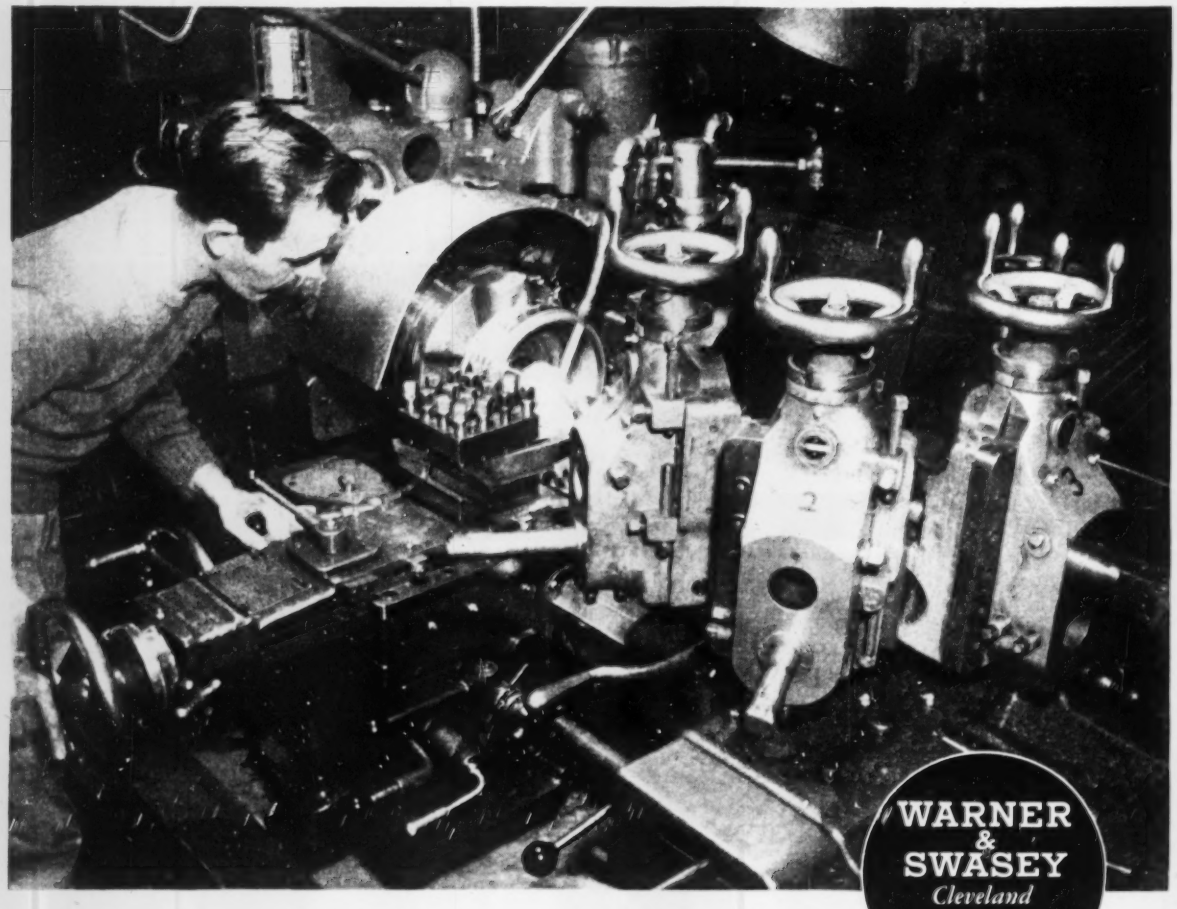
JOB LOTS...LARGE OR SMALL
No Problem at American Locomotive

WHEN YOU must machine a wide variety of jobs in various lot sizes—sometimes even single pieces—you must use turret lathes on which jobs can be set up quickly, changed with little down-time. American Locomotive has found they can handle these jobs *profitably* on Warner & Swasey Turret Lathes set up with Standard Universal Tooling.

At the Diesel Engine Division in Auburn, New York, six different model Warner & Swaseys are used on a variety of jobs ranging from lots of 6 to 500 pieces. Repair parts are also handled on these machines. These turret lathes turn everything from gray iron castings to tough alloy steels and hold limits of .0005".

American Locomotive experience proves jobs can be switched quickly on these Warner & Swaseys. Warner & Swasey power handles heavy multiple cuts. Warner & Swasey speed permits most efficient use of carbide tools. Rigid Warner & Swasey design guarantees lasting accuracy.

Warner & Swasey Turret Lathes have proved themselves profitable in handling precision jobs of many different kinds in thousands of plants—on job lots, large or small. So before you invest in any machine tools, call in your nearest Warner & Swasey Field Representative and find how Warner & Swasey can improve production and build profits for you.



A steel forged drive gear for Diesel locomotives being machined on a Warner & Swasey 1-A Turret Lathe. Limit: .0005" on O.D. of hub. Pieces in lot: 20. Repair parts for locomotives are also made on this machine.

WARNER & SWASEY
Cleveland
PRECISION MACHINERY SINCE 1880

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

STEEL QUARTERLY SURVEY

Delivery Dates for Components

(NUMBER OF WEEKS FOR DELIVERY)*

COMPONENT	CURRENT QUARTER	LAST QUARTER	YEAR AGO	OUTLOOK
Antifriction Bearings	0-26	0-26	3-26	Improvement
Copper Wire	0-12	0-12	0-12	No Change
Die Castings	6-8	4-5	8-10	Slight Improvement
Fasteners	0-6	0-8	2-12	Improvement
Forgings	3-4	4-8	8-28	Little Change
Gears	0-12	0-12	0-26	Some Improvement
Gray Iron Castings	1-4	1-5	8-12	Some Tightening
Malleable Castings	2-8	2-8	10-14	Little Change
Mech. Rubber Goods	8-10	8-10	8-10	No Change
Nonferrous Castings	4-6	4-8	4-8	No Change
Screw Mach. Products	1-20	1-20	1-26	Some Improvement
Small Motors	0-12	0-20	4-20	Little Change
Stampings	1-6	1-6	12-14	Some Tightening
Steel Castings	4-14	6-14	6-36	Some Improvement
Weldments	8-26	8-26	8-52	Some Improvement

*Figures apply when patterns, tools and/or dies are available and when normal quantities of typical jobs are ordered. Exceptions, therefore, are to be anticipated.

1953: Back to Normal

INDUSTRY'S going to get the components quicker to assemble a record output in 1953.

Signs point that way as materials ease and expansions are completed. Imponderable as yet is the impact of Ike's hotter cold war, but few expect the heat to be felt by industry. Last twinges of the steel strike should vanish by second quarter with aluminum and copper slated for easing supply.

Greatest Year? — Infant 1953 could well mature into the greatest year in industry's history, stands assured of a robust life. Mirroring the portent of vigorous activity are components suppliers who see full, but unpressured, production ahead. Those with unduly long delivery dates see a return to shorter waits, while those now offering abnormally short delivery owing to idle capacity see a pickup in business as the year starts with return to the longer normal delivery periods.

That was the feeling as STEEL polled the components makers, but there will still be a few sour spots in the apple-pie normalcy ahead. Here are some of the things to watch for:

Antifriction Bearings — Tightest are the smaller precision bearings due to military demand, increased use by industry. Roller bearings also require plenty of lead time as alloys lag added military demand. With nickel slated for moderate easing in 1953, expect some improvement in bearing deliveries but not back-to-normal.

Die Castings—Higher auto and appliance production lengthened delivery dates as the fourth quarter drew to a close, and that situation should carry through the first quarter. Most die-casters see easing delivery by mid-year and beyond as backlogs are met.

Fasteners—Deliveries on normal sizes of bolts and nuts now average half the time required a year ago. Still tight are larger sizes due to shortages of heavy bars and military demand. Little improvement is expected.

Forgings—Deliveries are now being made in four weeks on items that a year ago were being prom-

ised in eight weeks to seven months. One reason given was scare buying in anticipation of a forging-quality steel shortage with military shell procurement. Forging buyers are now more inventory-conscious but the military could throw the forging delivery picture out of focus.

Gears—Tightest are smaller sizes in highest use and larger gears which must be specially made. Roller chain is also slow in delivery due to alloy shortages. Added steel output and alloy easing should help delivery by last half.

Ferrous Castings — Gray iron founders are finding business uncomfortably slow in some cases. As a result, deliveries are phenomenally quick often in less than two weeks. Malleable castings are only slightly more extended. Tightest are steel castings with delivery promises running up to 14 weeks, still a marked improvement over year-ago figures. Steel castings backlogs should decline slightly during the year with improvement in delivery dates, while the hoped-for pickup in gray iron and malleable castings would tend to extend delivery.

Screw Machine Products—Low tolerance, small diameter work can be had in one or two weeks. Diameters over 1 inch run from eight weeks to six months, due both to bar shortages and Ordnance purchases. Some improvement is in prospect as capacity is increased and bar supplies ease.

Stampings—Bonanza to stampers has been the improving sheet supply. Deliveries are now possible in half the time required a year ago in many cases while tapering government work helps free capacity. The upswing in auto and appliance production is now cramping facilities in some areas, and a moderate tightening in delivery dates is expected as low year-end inventories are rebuilt.

Fourteen Materials Ease in 1952

Progress in expansion of materials production resulted in the removal of 14 metal items from the list of "most critical" since Dec. 28, 1951, the "List of Basic Materials and Alternates" reveals. Issue No. 10 of the Defense Production Administration publication, released

CAGE DIES STACKED HIGH

. . . looks like another good year

Dec. 28, 1952, lists the status of critical materials and changes within the past year. It includes over 300 principal items.

The 11 most critical materials at present are: Titanium; cobalt; columbium; molybdenum; nickel; tantalum; heavy castings (3000 pounds or over) of gray iron, gray iron alloy and carbon; nickel bearing stainless steel; diamond bort.

The 14 items eased from the most critical list are: Aluminum, beryllium, selenium, platinum, copper, lead, tin, zinc, tungsten, cold-drawn and hot-rolled alloy steel bars, heat-resistant alloy steel castings, plates and structural shapes.

RFC Cites 1952 Profits

Reconstruction Finance Corporation had a good year in fiscal 1952, spokesmen say. Sufficient amounts were earned from lending activities to cover all expenses of operation and to pay a dividend of $12.2 million on the corporation's capital stock of $100 million held by the U. S. Treasury.

Of the dividend, $10,853,671 represented net earnings in fiscal 1952, as compared with net earnings of $7,618,337 in 1951. Lending activities expanded similarly. During fiscal 1952 the corporation approved 3851 loans totaling $378.2 million. In the same period in 1951 it made 3271 loans which amounted to $290 million.

Tool, Die Boom Continues

New developments and fewer controls will help offset any decline of defense work

CONTRACT tool and die industry anticipates another year of good business which may be extended to two years. Growing demand for special tooling for civilian products is expected to counteract any foreseeable decline in tooling for the defense program.

Shipments by the industry in 1952 are estimated to be at least $700 million, or more than double the 1947 total of about $300 million. It would be difficult for the industry to further expand its output, says George S. Eaton, executive secretary, National Tool & Die Manufacturers Association, Cleveland.

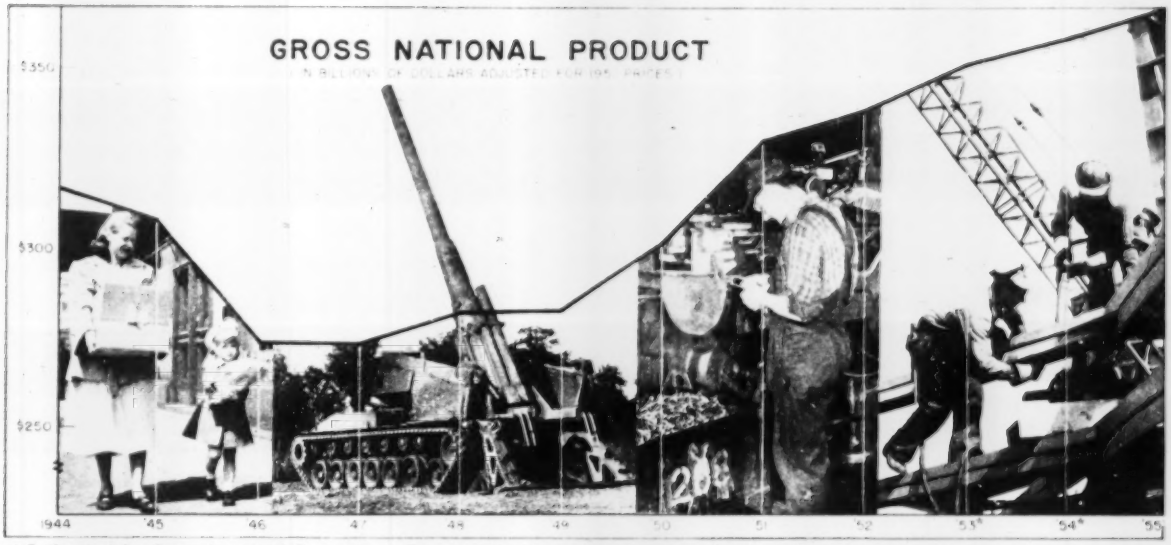
Lack of highly skilled mechanics is the great obstacle in the way of much further increase in output. Shops have added all the competent mechanics they could find, have trained others through apprenticeships, and are working long hours, many between 50 and 55 hours a week. Some men are maintaining even longer work schedules.

Orders High, But — Backlog of unfilled orders continues at high levels, although there was a gradual decline during most of last year. Toward the close of the year the backlog represented about three months' operations at the current rate.

In the majority of areas, defense work accounts for 50 to 85 per cent of the volume of special tooling now being turned out by the contract shops.

With continual changes in aircraft design, guided missile development and utilization of electronics in many new ways, there is bound to be a great need of special tooling to adapt the production-line machines to the manufacture of these new or altered products.

Also, as controlled materials become more plentiful, manufacturers of civilian goods will be seeking the special tooling required for the production of new models which will be required to meet increased competition.



* Estimated by Department of Commerce. Gross national product is value of all goods and services.

Business Outlook: Good Through 1954

Department of Commerce predictions anticipate a sunny 1953 for businessmen followed by a fair 1954. Scattered showers may arise when defense orders fall off in 1955

CONTINUING to rise steadily through 1953 and probably 1954, America's gross national product will not suffer from a moderate dip in capital expansion this year. That's the opinion expressed in a report of the Department of Commerce, made public by Secretary Charles Sawyer.

Steady Rise—As the accompanying chart shows, the report, "Markets after the Defense Expansion," optimistically foresees a constant increase in American productivity until the gross national product reaches a 1955 level of 8 per cent above 1952. Most businessmen predict a healthy 1953, and the Commerce department expects prosperity to spill over into 1954 with recession a possibility but by no means probable.

Forecasts for this year revolve around the prospective rise in defense expenditures, the satisfactory inventory position of business, possible relaxation of controls and unlikelihood of a serious strike. Next year's outlook is uncertain, but several straws in the breeze make a recession doubtful. Federal, state and local government purchases should increase in 1954 and large corporations already expect to spend 90 per cent as much on plant and equipment next year as this year.

Slight Dip—Capital investment plans of 2000 firms surveyed by the Commerce department show programs of $26.3 billion in 1953, slightly below 1952's $26.9 billion. Although the bulk of our mobilization base may be completed (See page 45) the demand for productive facilities is stimulated by high output, income and employment. Many consumer goods industries hampered by materials allocation restrictions plan to increase expenditures in 1953. Companies interviewed by the department plan capital outlays in 1954 and 1955 at 85 and 80 per cent, respectively, of the 1952 volume. This dip may be made up by future industrial projects.

Defense expenditures will probably rise to an annual rate of $55 to $60 billion in 1953 and 1954 if present military goals are maintained. An expected reduction in 1955 to between $50 and $55 billion could seriously test the nation's economy. Hence more private markets should be developed by then.

Other offsetting forces might include stimulus to private spending by a lowering of federal tax rates and a rise in civilian government purchases. In addition, dynamic new industries such as atomic energy, electronics and air transportation may create new business activity to compensate for a falling-off of national defense expenditures.

GE To Build Appliance Plant

General Electric Co.'s plans to build an $8 million small appliance plant in Tyler, Tex., place that city in the forefront of industrial growth in the eastern section of the state. This project is a strong stimulant to the rapid industrialization which has been under way in the city since 1945. Industrial employment increased 307 per cent from that year to 1952.

Metalworking firms included in the 12 which located in Tyler last year are: Allied Chain Link Fence Co., gates and fences; Glauber of Texas, plumbing fittings and supplies; J. Haynes Match Plate Co., makers of experimental castings for foundries; Park Mfg. Co., metal parts, castings and forgings; Texas Tubular Products Co., plumbing supplies, traps and wastes.

Financing Started for Taconite

Reserve Mining Co. filed a $148-million mortgage as the first step in financing its Minnesota taconite project. Reserve will mine the ore at Babbitt and process it at Beaver Bay. The company expects first shipment of treated taconite to leave Beaver Bay in 1955.

The Long Look at Materials

The National Security Resources Board proposes legislation to implement some of the Paley report recommendations. The move is toward a nonpartisan national materials policy

THE FINDINGS and recommendations of the National Security Resources Board and the President's Materials Policy Committee (the Paley commission), gathered in a Democratic administration, may form the basis of Republican action during the next four years.

Those recommendations are for specific pieces of legislation to combat rising costs and eventual exhaustion of natural resources in this country and to provide sufficient energy for our expanding economy. The PMPC came up with 78 proposals (for more on the Paley report see June 30, p. 46); the NSRB reviewed them all but suggested legislative action in only some cases.

Two-sided — Many of the proposals are so high on security lists they have become bipartisan. Action on other recommendations of the NSRB is contingent upon policy-making political decisions. Those include suggestions for the development "under public and private sponsorship" of hydroelectric power facilities, construction of the St. Lawrence Seaway, a law allowing the Interior department to manage off-shore oil deposits, repeal of the "Buy American" act and elimination of import duties on materials which the U. S. must import in great quantities.

What They Said — Tip-off as to what may happen to key recommendations of the Paley report comes from the reactions of government agencies and the NSRB (see the chart below). The NSRB quizzed the agencies for comments before sending its report to the President.

In general, the agencies agree on expanded fact-finding and aid-to-industry in developing mineral resources. Exception is the tax policy which allows percentage depletion as a deduction in the minerals industry. On that point opinion varies widely. The NSRB proposes a committee be appointed to investigate the matter further and report within six months.

Wait Awhile — While there is "general agreement" on the objective of easing tariff restrictions on imported raw materials or semi-finished goods, little will be done with the NSRB recommendation until the Public Advisory Board to the Director of Mutual Security reports on the general international trade policy. Tariffs on materials is considered only a part of the bigger decision. The advisory board is expected to report soon.

Development of hydroelectric power facilities and greater private participation in efforts to derive

PALEY COMMISSION RECOMMENDATION	GOAL	GOVERNMENT AGENCY REACTIONS	NSRB RECOMMENDATION
No. 1	More fact-gathering and analysis to encourage discovery and development of new domestic reserves of critical raw materials.	Agreeable.	Department of Interior should be so instructed.
No. 6	Development of techniques and instruments of exploration for minerals.	Agreeable, but need for interagency co-operation is cited.	No need for additional action. The National Science Foundation is active in this field.
No. 8	Alternate means of leasing federally-owned mineral deposits.	Agreeable.	Legislation should be enacted.
No. 12	Retention of the percentage depletion rates now provided in Internal Revenue Code as an inducement to risk capital to enter the minerals industry.	Opinion varies widely, with the Treasury department disagreeing strongly.	Question should be studied further.
No. 37	More geological surveys, preliminary exploration and advice on mining technology for underdeveloped areas of the world.	Agreeable.	Legislation should be enacted.
No. 45	Permanent legislation eliminating import duty on any industrial material when the U. S. is largely dependent on imports. Repeal of the "Buy American" act.	Agreeable, but cited as only one part of larger tariff problem.	Legislation should be enacted.
No. 54	Development of hydroelectric power as fully and as quickly as is economically feasible.	Agreeable.	Funds should be requested from Congress.
No. 70	A permanent stockpile of critical materials.	Agreeable.	Legislation unnecessary at this time.
No. 76	Development of the St. Lawrence Seaway.	Agreeable.	Congress should be asked to proceed with the project at once.
No. 78	Continued life for the National Security Resources Board as a policy-maker in the fields of materials, energy and special security problems.	Agreeable, as long as duties are well-defined and do not include fact-finding.	Funds for such activity should be asked of Congress.

electric power from atomic sources both received approval of all commenting agencies, as did a recommendation for the development of the St. Lawrence Seaway.

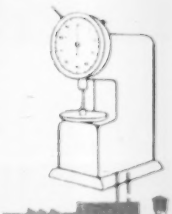
Unnecessary — Though the agencies approved a permanent stockpiling arrangement, the NSRB did not second the Paley report's recommendation for legislation to that effect. The NSRB says, "The language of the Stockpile Act, and the recent practice of the Congress in appropriating adequate funds for the procurement of materials for the strategic stockpile make specific action unnecessary at this time."

The NSRB suggestions included a recommendation for its own continued life in fact-finding, policy-making activities. Among dissenters from this proposal was the Agriculture department which did not believe another fact-finding group was needed. If it gets extended life based on this proposal, NSRB activity will probably be slanted toward reviewing and recommending actions to the President rather than statistic gathering.

DPA Spurs Aluminum Output

The Defense Production Administration partially filled its 200,000-ton primary aluminum expansion goal by granting a certificate of necessity to Harvey Machine Co. Inc., Torrance, Calif., for reduction facilities to produce 54,000 net tons annually. Harvey's installations, including an alumina plant and bauxite facilities, will be located at The Dalles, Oreg., with power to be supplied by the Bonneville Power Administration. Project costs will be about $65,250,000, with 85 per cent allowed for accelerated amortization.

DPA's latest action will bring to 164,000 short tons the amount of new primary aluminum capacity announced under its Oct. 1, 1952 expansion goal. In November, 1952, DPA issued two certificates to Olin Industries Inc., East Alton, Ill., for facilities to produce 110,000 tons of primary aluminum annually. The latest revision will raise domestic capacity to 1,746,000 tons, compared with 1950's potential of 719,000 tons.



Gage Makers:

Whose Money Will Finance Mobilization Expansion?

WASHINGTON plans are afoot to make it possible to expand the gage industry output 50 per cent over what it is today—about $98 million worth of gages annually for the armed services alone.

Gage makers have increased production some 40 per cent over a year ago, mostly without expanding plant area. Better machines have helped, and new production methods and operator techniques accounted for the rest.

Expansion? — Those methods will be explored still further. How much actual new capacity will be added is debatable. Says one manufacturer: "We invested our own money in facilities for defense work during World War II and then were left high and dry as soon as the emergency passed."

More subcontracting is a possibility, but that's being used a lot already. Shadow plants appear as another way to get added capacity, for some of the new potential probably would not be used unless there's an allout war. Government planners are thinking on a just-in-case basis.

Matter of Manpower — Skilled manpower is as much of a bottleneck to increased gage production as plant capacity in some areas such as New England, Detroit and Ohio. Gage manufacturers have sometimes had to take the work where the men were instead of hiring more men in their own shops. That's led to an increase in jobbing shops, small firms usually, which produce parts or units on a single contract. There have been cases in the distressed areas mentioned above of farming gage work out to tool and die shops, which actually is only robbing Peter to pay Paul.

Materials are much easier now than a year ago and rank a poor third in problems of the gage industry after manpower and plant space. Still hard to get are gages made of stainless steel or of beryllium copper, in which case deliveries are extended 60 weeks or more. Fortunately, the need for gages of that type is not extensive.

Business in 1952 remained steady at high levels. Some gage makers report incoming orders are about even with last year, but increased capacity has enabled them to lower their backlogs about 20 per cent. But the majority of firms say that they're only meeting demand with no reduction in backlogs which average 11 to 12 months.

No Worry—The huge backlog is one reason gage makers aren't concerned about 1953 volume even though the outlook includes a drop off in demand next year. With direct defense business accounting for about 50 per cent of the gage volume, a tapering off in defense tooling programs should bring the dip despite the fact automotive users, among gage makers' biggest civilian customers, and appliance makers have shown an increasing interest in gaging. For at least one Detroit firm, Freeland Gauge Co., 1952 was its biggest year ever.

Another group of civilian customers which is growing constantly are the component and fittings makers.

Still, the bulge in gage production is bound to disappear if defense requirements slacken. That's why the shadow plant suggestion is such a crucial one. The mobilization-inspired plant expansion for gage manufacturers is not likely to come about any other way.

Gage Makers Meet

Technical questions will be featured in the formal meeting of the Gage Industry Division of the American Ordnance Association in Philadelphia Jan. 15.

Escalators Shift Gears

But readjustment of wages to the new cost-of-living index means less than firming gains

MOST POTENT of statistics, the cost-of-living-index is threatening great shakes in the labor picture. Renegotiation of contracts for some 3.5-million workers is upcoming as a result of revisions to modernize the index.

The new index will be coming out in February for January price levels. Most labor leaders are not happy about the prospect. Academic problems like proper sampling and weighting don't disturb them nearly so much as the queasy feeling that the old index gave wages a stronger push. And statisticians tend to agree *sub rosa*.

New Market Basket — Food, which made up about a third of the old index, will be dropped to less than 30 per cent in the new system and rent will come down. Both did more than their share of escalator pushing.

What the unions would like to do, heretically, is use the old index in times of rising food prices. When food prices start to decline, they'd like to switch to the new index. But the old index just won't be around. Old index figures can be converted to "new" by dividing by 1.672, but the conversion is purely mathematical.

Changes—The new index will be based on a new survey of 75 additional items including home ownership, home maintenance, restaurant meals and used cars. Fourteen of the 34 large cities formerly included in the index will be dropped, while 26 new medium and small cities have been added. Weighting will be adjusted in accordance with the 1950 census and the whole number bundle based on a 1947-1949 base rather than the current 1935-1939 pedestal.

That means that the 191 figure last summer would be only 114 under the new index and a point change will be harder to achieve. Thus a 1-cent change for each 1.14 index point increase the common escalator arrangement will have to be rebased on 0.68 moves. That can be done mathematically and for most unions the recalculation will be all that is required.

Consolidation — Sole exception could be the 1.3-million autoworkers. Walter Reuther has indicated the union "will not accept an automatic changeover."

But most unions figure the cost-of-living index may have served its usefulness. The guaranteed annual wage could be the contract-issue henceforth as labor quietly drops the escalator arrangement as living costs stabilize.

Tall Rig for a Deep Hole

Notable success in the recent invasion of eastern oil fields by rotary drilling rigs in encouraging drillers to bring in ever larger equipment. Biggest rotary in the Driftwood field of Pennsylvania is this National Supply Ideal Type 75CB rig operated by Keta Oil & Gas Co., which on its first hole brought in a 1½ million cubic foot producing well at 7034 feet in 31 days.

Ship Owners Accept Terms

Government - American Export Lines settlement is in right direction, but more is needed

WITH THE settlement last month of the final sales prices for the passenger liners *S. S. Constitution* and *S. S. Independence*, the government took a step in the right direction to clarify its shipbuilding subsidy policy, but there is still a long way to go before American shipping gets a real shot in the arm.

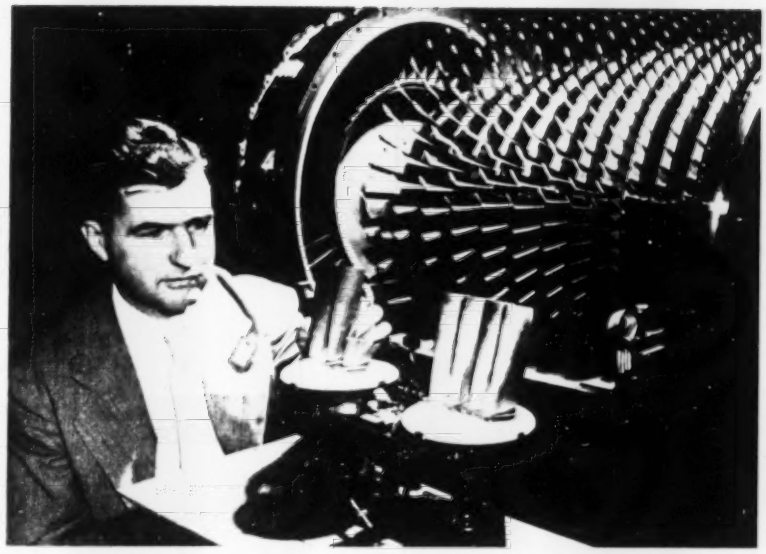
Under the original agreement, the American Export Lines Inc. was to pay the government $12 million each for the *Constitution* and the *Independence*. Early last fall, the government shifted the percentages on which the payment was based and told the company to pay an additional $5.5 million for each ship. The final settlement was for $14,036,751 for the *Independence* and $14,436,956 for the *Constitution*, plus escalation costs. The company agreed to this.

Shipbuilding Nil — At present there are no major ocean-going vessels under construction in American yards, and only a few domestic lines have any in the planning stage. A. S. Graham, director of public relations for American Export Lines, feels that U. S. owners will not go abroad to have ships built even though the costs would be less than American prices. Such a move in effect would kill the government subsidy program which was instituted originally to offset the differential in foreign costs and encourage U. S. owners to use U. S. shipyards. If the new administration defines the differential policy clearly, as many men in the industry think it will, the sad state of American shipping may be improved.

Snafu—A case of a slightly different nature is the superliner *S. S. United States*. That is a matter of contractual obligation. John M. Franklin, president of the United States Line Co., claims that company's contract with the government for purchase of the liner is binding and cannot be broken at the will of the government. Attorney General McGranery says that it "is voidable at the election of the United States," and that as much as $10 million should be paid by the company.

Challenge — Mr. Franklin contends that this is an illegal action. If the government wants to void the contract to get the extra money, he challenges the attorney general to let the courts decide.

L. R. Sanford, president of the Shipbuilders Council of America, says that if the government would follow up the favorable action on the *Independence* and *Constitution* with equally favorable action on the *United States*, it would be a boon to domestic shipbuilding.



Titanium Replaces Steel for Jet Engine Compressor Blade

Substitution of titanium alloy Ti 150A for steel in jet engine compressor rotor blades cuts blade weight almost in half. A General Electric Co. technician balances four titanium blades against two and a fraction steel blades to show how several pounds of pay-load saving weight can be cut from compressor rotors

PAIP Sets the Stage for Defense Expansion

PAIP: You will become familiar with these initials in the months to come.

They are short for "Production Acceleration Insurance Program," adopted by the Air Force and Navy Bureau of Aeronautics in December of 1950 and recently by the Department of Defense. While thus not new to the services, PAIP is expected to become newsworthy now the Department of Defense has requested an appropriation to speed the program.

The Meaning—What is PAIP and what does it do? Says a Pentagon spokesman: "Under PAIP we formulate our procurement not only to take care of current military end-item needs but to build into existing facilities a production potential which will help create a full wartime industrial mobilization base.

"We do this by procuring larger and faster machine tools than presently needed. We do it by laying out production lines for single-shift operation whose capacity could be greatly increased by running them on two or three shifts. We do it by placing contracts with several suppliers even though one of them alone could meet needs of the moment. Thus we raise potential expansible capacity.

"What we need now is authority to buy machine tools and other production equipment of a long-lead-time nature, to equip all existing facilities completely. In particular, we want to order the big tools, classed as 'elephants,' which take 18 months to two years to produce. By doing that, we would greatly reduce the delays in getting a defense plant into peak production. To illustrate what is meant, it has been taking two to three years to get an airframe plant to peak production — and a lot of this time is spent waiting for long-lead-time machine tools. If we get this equipment ahead of time, then delays in getting an airframe plant into peak production would be limited to recruiting and training a labor force and setting up the flow of materials."

New Furnaces at Cameron

Cameron Iron Works Inc., Houston, made the first pouring from one of two electric furnaces newly installed under a multimillion-dollar expansion program. The 25-ton units, installed under a cooperative program with the government, are designed to produce high quality steel for manufacture of ordnance items.

Plan Manganese Recovery

An experimental plant to test the commercial feasibility of recovering ferromanganese from open hearth furnace slag will be constructed within the coming year.

The Defense Materials Procurement Agency will make cash advances to Mangaslag Inc., Ft. Worth, Tex., to aid in building a pilot plant at Coxton, Pa. This plant is expected to produce at least 1000 long tons of ferromanganese a month from slag furnished by major steel companies.

Processes to be employed by the new plant have been developed by the U. S. Bureau of Mines, attempting to salvage the estimated 500,000 tons of metallic manganese lost to slagpiles yearly.

Although the start will be slow, success would make the U. S. less dependent on imports from abroad, which now account for about 90 per cent of American manganese supplies. Domestic consumption in 1951 reached about 1.7 million long tons of ore. If the experimental plant is successful, Mangaslag will construct several commercial plants with much greater capacities.

SELECTED DEFENSE CONTRACTS IN EXCESS OF $100,000

PRODUCT	CONTRACTOR
Shells, 20 mm	Harvey Machine Co. Inc., Torrance, Calif.
Bombs, 100 lb	Pyrene Mfg. Co., Newark, N. J.
Metal Parts for Rockets	Hubeny Brothers Inc., Roselle, N. J.
Fuzes	Swank Inc., Attleboro, Mass.
	Harvill Corp., Los Angeles
	Price Pfister Brass Mfg. Co., Los Angeles
Aircraft Engine Parts	Wright Aeronautical Corp., Curtiss-Wright Corp., New York
Actuators	Airborne Accessories, Hillside, N. J.
Fuel Controls	Holley Carburetor Co., Detroit
Hydraulic Pumps	Pesco Products Co., Borg-Warner Corp., Chicago
Parts for Pumps	Worthington Pump & Machinery Corp., Harrison, N. J.
Inverters	Jack & Heintz Precision Industries Inc., Cleveland
Trucks, Crane, Gasoline	Hughes-Keenan Corp., Delaware, O.
Trucks, Warehouse	Yale & Towne Mfg. Co., New York
Fire Trucks	ACF-Brill Motors Co., Philadelphia
Generator Sets	Miehle Printing Press Mfg. Co., Chicago
Electric Fans	Hunter Fan & Ventilating Co., Memphis, Tenn.

CHECKLIST ON CONTROLS

Materials Orders

ELECTRIC UTILITIES—Direction 3 to NPA Order M-50, issued and effective Dec. 24, 1952, provides for automatic revalidation of allotments for major electric utilities plant additions by permitting placement of authorized controlled material orders calling for deliveries of controlled materials in the calendar quarter succeeding the quarter for which the allotments were made.

TIN—Amendment of Dec. 31, 1952, of NPA Order M-8, effective Jan. 1, 1953, removes allocation controls from pig tin and authorizes certain new uses of tin and tin oxide. It also increases the amounts usable for specific purposes.

CANS—Amendment of Dec. 31, 1952, of NPA Order M-25 removes from the order any reference to quota percentage restrictions on the quantity of cans which may be used to pack various products. The restrictions expired on Dec. 31. At the same time NPA revoked Directions 2, 3 & 5 to NPA Order M-25 to implement elimination of the quota restrictions. All actions were effective Jan. 1, 1953.

STEEL DISTRIBUTORS—Direction 1 to NPA Order M-6A was revoked Dec. 31, 1952, effective Jan. 1, 1953. It required steel distributors to give preference, from Jan. 21, to Dec. 31, 1952, to authorized controlled material orders bearing allotment symbols A, B, C, E, and a digit and Z-2. Preferential treatment for orders bearing those symbols is continued by Amendment 1 of NPA Order M-6A, issued Dec. 31, 1952, and effective Jan. 1, 1953.

STEEL WAREHOUSES — Direction 3 to NPA Order M-6A was revoked Dec. 31, 1952, effective Jan. 1, 1953. Until Dec. 31, it froze stocks of certain finished steel products for 15 days after receipt by warehouses.

STEEL — Direction 6 to NPA Order M-1 was revoked Dec. 31, 1952, effective Jan. 1, 1953. It provided that when a producer accepted orders in space reserved for such orders, the orders were required to be scheduled for shipment during the month for which delivery was requested and shipped on dates as close to those scheduled as possible, but not later than Dec. 31, 1952.

OIL COUNTRY GOODS—Directions 1 and 4 to NPA Order M-46, covering allocation of critical materials to U. S. and Canadian oil and gas industries, and Directions 1 and 2 to NPA Order M-46A, covering allocation of critical materials to foreign oil and gas industries, were revoked Dec. 31, 1952, effective Jan. 1, 1953.

OIL COUNTRY GOODS—Amendment of Jan. 6, 1953, of Direction 5 to NPA Order M-46A and Direction 7 to NPA Order M-46, effective Jan. 6, give general authorization for oil and gas operators to make trades or exchanges of new oil country tubular goods and line pipe involving foreign-made goods under certain conditions.

Controlled Materials Plan

TIN—Amendment 1 of CMP Regulation 1 and Amendment 2 of CMP Regulation 6, both issued and effective Dec. 24, 1952, remove specified secondary tin mill products from the controlled materials category and from Class A and B classification.

STEEL—Amendment of Dec. 24, 1952, of Direction 4 to CMP Regulation 3 extended from Dec. 31, 1952, to June 30, 1953, the date for special preferential acceptance and delivery status of DO orders for products and components containing steel placed in support of military, atomic energy and machine tool programs. Amendment was effective Dec. 24, 1952.

STEEL—Amendment of Dec. 24, 1952, of Direction 18 to CMP Regulation 1, effective Dec. 24, 1952, permits certain producers of Class B products to calculate their own allotments of carbon and alloy steel items for the second quarter, 1953, on the basis of 110 per cent of their total third quarter, 1952, allotments, provided that such former allotments did not exceed 500 tons in the case of carbon steel and 90 tons in the case of alloy steel.

NPA Regulation

INVENTORY—Amendment of Dec. 24, 1952, of NPA Inventory Regulation 1, effective Dec. 24, 1952, removes inventory controls from the following commodities: Gray iron castings (excluding cast iron soil and pressure pipe and fittings), rough and semifinished; malleable iron castings, rough and semifinished; aluminum foil (plain coiled); aluminum powder (atomized or flake, including paste); cerium metal, cerium alloys, such as ferrocerium, and cerium compounds in which cerium is a recognizable component; all scrap and waste material containing commercially recoverable cerium of the above listed types; electrodes, carbon; graphite, artificial, electrodes and anodes; graphite, natural; crucible flake, ceylon lump, 97 per cent and higher carbon; iridium; components and parts for electric light bulbs and tubes; gas cylinders. The amendment also deletes the following commodities subject to specific calendar day inventory limitations: New steel shipping drums; gray iron castings (excluding iron soil and pressure pipe fittings), rough and semifinished; strapping metal.

Price Regulations

SMALL MANUFACTURERS—Amendment 3 of CPR 161, issued Dec. 24, 1952, and effective Dec. 29, shifts the place of filing reports on new commodities from Washington to the nearest district office for all manufacturers whose gross sales in their last fiscal year did not exceed $1 million and all new manufacturers who do not expect their gross sales to exceed $1 million during their first year.

TOOL STEEL—Amendment 8 of CPR 98, issued Dec. 30, 1952, and effective Jan. 5, 1953, authorizes warehouse resellers of tool steel bars and drill rods to increase their dollars-and-cents ceiling price by $0.50 per 100 pounds added to the current net mill price f.o.b. point of production. Transportation costs are to be applied to destination point rather than warehouse location.

IMPORTS—Amendment 16 of CPR 31, issued Dec. 30, 1952, and effective Jan. 5, 1953, states that when a general overriding regulation exempts or suspends controls on certain commodities, unless language appears in the general overriding regulation which limits the applicability of that regulation to domestic sales only, it is applicable also to all sales of such commodities otherwise under CPR 31.

COTTON-GINNING MACHINERY—Supplementary Regulation 10 of CPR 30, issued and effective Dec. 31, 1952, authorizes an increase of 4.7 per cent in ceiling prices for manufacturers of cotton-ginning machinery, equipment and repair and replacement parts. Manufacturers may also reflect in their ceiling prices increased metals costs granted under General Overriding Regulation 35 and increased outbound transportation costs granted under Supplementary Regulation 9 of CPR 30.

MACHINERY MANUFACTURERS—Amendment 2 of Supplementary Regulation 8 of CPR 30, issued and effective Dec. 31, 1952, extends to Jan. 31, 1953, the time in which certain machinery manufacturers may choose an optional method of calculating increased ceiling prices under the Capehart amendment.

STEEL CASTINGS — Supplementary Regulation 2 of CPR 60, issued and effective Jan. 2, 1953, authorizes an increase of 5 per cent in ceiling prices for producers of carbon or low alloy steel castings and manganese steel castings in addition to increased costs of steel, pig iron, copper and aluminum as provided by General Overriding Regulation 35.

COPPER — Amendment 5 of General Overriding Regulation 35, issued Dec. 31, 1952, and effective Jan. 5, 1953, authorizes manufacturers who use certain products containing primary copper to pass through increased cost of those products in cases where the ceiling prices of the products have been established under General Ceiling Price Regulation.

GRAY IRON CASTINGS—Supplementary Regulation 3 of CPR 60 permits an increase of 9 per cent in ceiling prices for producers of gray iron castings. Amendment 8 of CPR 60 defines the categories of gray iron castings, steel castings (carbon or low alloy), high alloy steel castings, manganese steel castings and malleable iron castings.

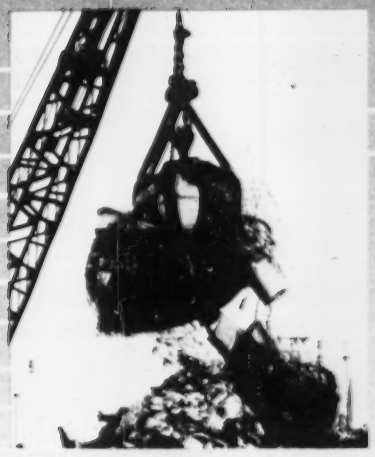
INGOT MOLDS, STOOLS—Amendment 43 of CPR 30 and Amendment 5 of Supplementary Regulation 3 of CPR 30, both issued and effective Jan. 5, 1953, clearly exclude from coverage of CPR 30 ingot molds and stools. They are covered by castings regulation, CPR 60.

CONVERSION STEEL — Amendment 42 of CPR 30, issued Jan. 8, 1953, provides new methods for manufacturers of machinery and related products to use in computing ceiling price adjustments to cover the increased cost of conversion steel. It is effective Feb. 6, 1953, or earlier at option of the manufacturer.

MACHINERY—Amendment 4 of Supplementary Regulation 4 of CPR 30 and Amendment 3 of Supplementary Regulation 8 of CPR 30, effective Jan. 12, 1953, give manufacturers of custom-built machinery the option of determining Capehart amendment price adjustments under either SR 4 or SR 8 of CPR 30.

STEEL
JANUARY 12, 1953

More Scrap for More Steel



Shortage threat currently absent with mill inventories largest since pre-war but scrap trade could be facing its severest test should world political situation worsen

SCRAP suppliers to the iron and steel industry could be facing their severest test this year.

Here's why. Assuming capacity steel production in 1953 of 116 million plus tons, and the ratio of scrap in the steel furnace melt holds about the same as in recent years, total scrap requirements could hit a new all-time high of 75 million gross tons.

That's a lot of scrap. It's 19.3 per cent more than was consumed in producing 93 million net tons of steel in 1952 and 9.5 per cent more than record scrap consumption in 1951 when over 105 million tons of steel poured from the nation's furnaces.

The Job Ahead—Of the total prospective scrap need, dealers and brokers, who handle 95 per cent of all purchased material, could be called upon to provide in excess of 36 million gross tons, 20 per cent more than the 30,600,000 consumed last year, and 9.3 per cent above the record purchased scrap burden of 33,822,431 tons in 1951. The remainder, around 38 million tons, would be generated by the steel mills as scrap loss from ingot to finished product.

With steel gushing from the mills in unprecedented volume as the new year gets under way, it is not surprising that once again the question is posed: Can scrap supply keep pace with the steel industry's expanding needs?

While there are some Doubting Thomases, notably among government economic control officials, for the immediate future at least, the answer seems to be an emphatic YES. But for the longer term an unequivocal YES or NO seems out of the question. There are too many imponderables in the situation to permit of other than rough guesses or, at best, "iffy" predictions.

Enough for Now — Except for certain specialty grades, such as stainless and chromium steels, and some electric furnace material, there is no apparent or threatened scrap shortage at present. Mill inventories of the major grades of carbon steel scrap amounted to well over 6 million tons at turn of the year, highest since pre-war. Further, they were increasing with material flowing steadily into market channels as result of sustained high-level fabricating operations. This latter is important since almost one-third of all purchased scrap is of the prompt variety.

Supply conditions currently are in marked contrast with those of a year ago. At that time some steelmakers were desperately short of supplies and a government-sponsored drive for dormant material was being pushed to avert a serious deficiency. As 1952 progressed, need for the drive faded and pressure on the market virtually disappeared when the steelworkers went on strike at midyear.

Runner-Up — Total consumption of scrap last year at 62,900,000 gross tons was second highest in history despite the 6-weeks steel strike in June and July. It compared with 68,500,000 in 1951, 61,500,000 in 1950, and 55 million in 1943, the best war year for scrap consumption.

While the melt of purchased scrap was off 9.5 per cent and home scrap 7 per cent due to the steel strike, the decline in consumption of pig iron was 14.5 per cent, from 63,800,000 tons in 1951 to 54,600,000 in 1952.

Well Stocked—The mills' bank of more than 6 million tons of scrap at the beginning of this year assures adequate supplies to support capacity steel operations for some time, tonnage flow from fabricators continuing in substantial volume. Everything considered, neither the scrap trade nor the steel mills would seem to have much reason to be apprehensive of supply adequacy over coming months.

But despite the current comfortable supply, complacency is not warranted. Conditions could change quickly and the present adequate supply position turn out to be deceptive of what the scrap trade would be called upon to deliver. This would be especially true should current accelerated steel production continue into the indefinite future under lash of worsening world political conditions, in-

cluding a stepped-up military campaign to end the dreary Korean mess. In such event, the specter of scarcity possibly could return quickly to haunt the industry.

Confident — Generally, for the long pull, scrap trade leaders entertain no fears of their ability to meet anything but extremes in demand.

Purchased scrap supply has outpaced the growth in steelmaking capacity through the years. There have been temporary supply shortages, of course, but, generally, except for periods of unusual demand, requirements have been met fully. This is confirmed by the record of consumption, which, over the years, has risen faster than has steel capacity.

How It Grew — In 1911, purchased scrap consumption totaled 5,804,000 gross tons with steel capacity rated around 35 million tons. Last year purchased scrap consumption exceeded 30 million tons with steel capacity rated at 108,500,000 tons. That's an increase of over 200 per cent in steel capacity in the 41-year span, but a boost of over 400 per cent in purchased scrap consumption in the period.

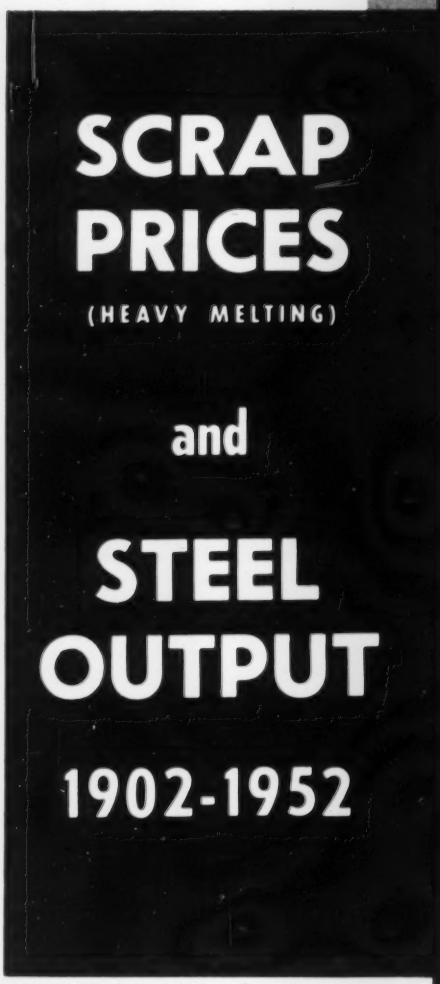
Whether the nation's scrap reservoir will be sufficient to provide for continued expansion of steelmaking capacity into the indefinite future is debatable. There are those who feel the country has been denuded of much of its dormant scrap through the collection drives during the war and postwar years, making industry increasingly dependent on prompt material.

One Thought—Also, it is thought by some that shipment of materiel out of the country during and since the war has substantially reduced the nation's scrap potential. Much of the current increase in scrap stocks, it is maintained, results from accumulations made possible only by the lengthy steel work stoppage last summer.

Hope that foreign supplies will be available in sufficient quantity to offset any basic shortage in domestic scrap resources appears slim. Steel production in other countries has been increasing, in some cases attaining unprecedented levels. These nations are bidding aggressively for available scrap in the world markets, and generally, the United States has not fared too well in securing a share of the available tonnage commensurate with its percentage of world steelmaking capacity.

Minor Factor—Last year foreign trade in scrap was but a minor factor in supply. Imports were only 85,000 gross tons compared with 345,000 in 1951, 650,000 in 1950, and 980,000 in 1949.

Adverse factors in the situation are not dampening the scrap trade's belief in its ability to meet future supply problems. Dealers are cognizant that their supply task will increase in step with enlarged steelmaking capacity since new blast furnace capacity is doing lit-

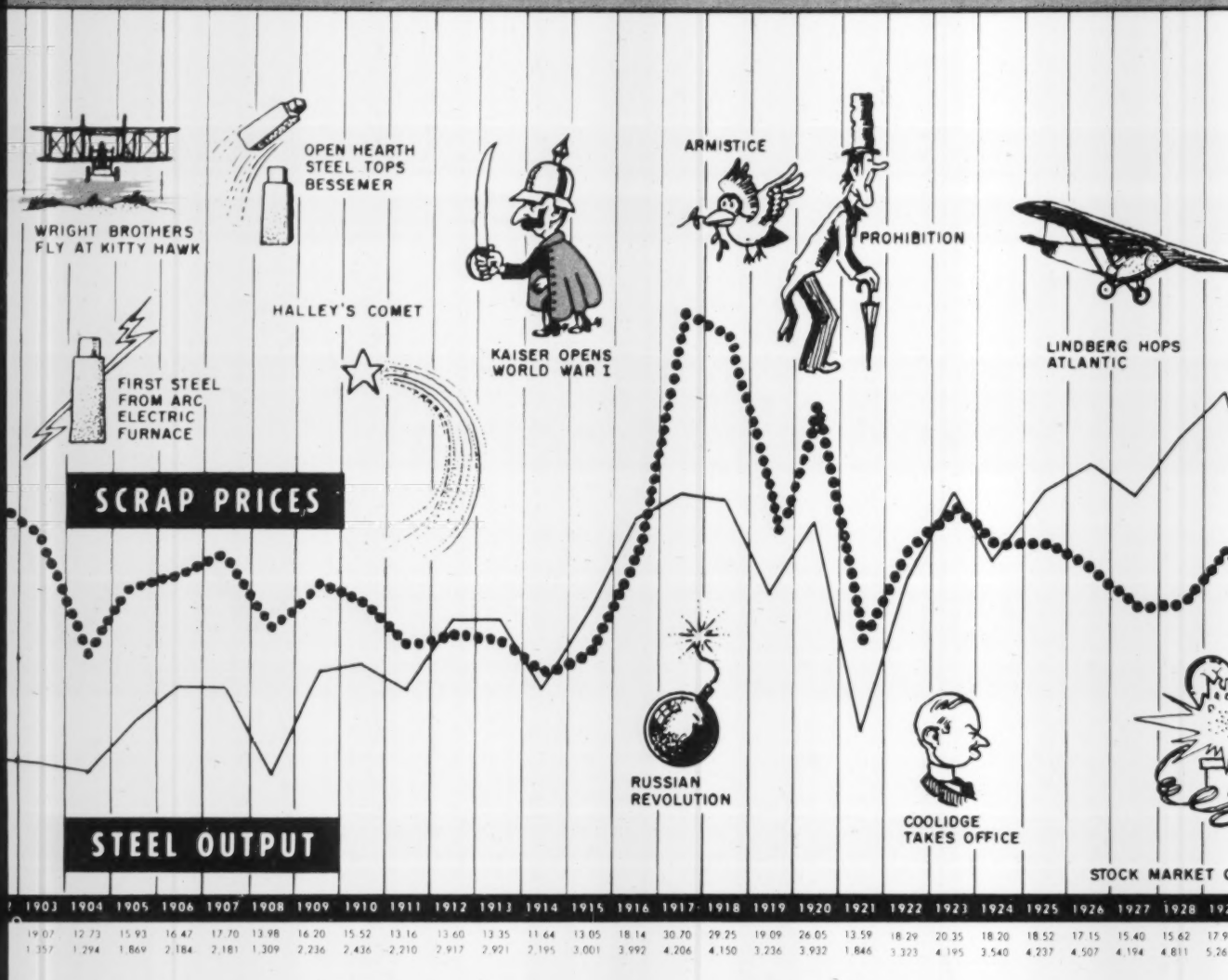


CONSUMPTION OF FERROUS SCRAP

(Gross Tons)

YEAR	TOTAL	PURCHASED	HOME	YEAR	TOTAL	PURCHASED	HOME
1911	12,100,000	5,804,000	6,296,000	1932	10,000,000	5,982,000	4,018,000
1912	16,100,000	9,107,000	6,993,000	1933	17,400,000	8,482,000	8,918,000
1913	15,300,000	8,571,000	6,729,000	1934	18,800,000	9,464,000	9,336,000
1914	12,200,000	7,857,000	4,343,000	1935	26,415,000	13,068,000	13,347,000
1915	18,600,000	8,661,000	9,939,000	1936	36,358,000	17,457,000	18,901,000
1916	23,400,000	10,804,000	12,596,000	1937	38,006,000	18,135,000	19,871,000
1917	26,800,000	12,589,000	14,211,000	1938	21,345,000	10,024,000	11,321,000
1918	25,400,000	9,821,000	15,579,000	1939	32,434,000	14,915,000	17,519,000
1919	20,700,000	1,000,000	19,700,000	1940	39,759,000	17,395,000	22,364,000
1920	26,000,000	15,000,000	11,000,000	1941	52,872,000	22,589,000	30,283,000
1921	12,400,000	8,125,000	4,275,000	1942	53,808,000	24,228,000	29,580,000
1922	23,700,000	13,839,000	9,861,000	1943	55,045,000	23,762,000	31,283,000
1923	27,000,000	12,768,000	14,232,000	1944	51,776,000	23,145,000	31,631,000
1924	26,200,000	14,018,000	12,182,000	1945	50,171,000	22,527,000	27,644,000
1925	30,700,000	15,982,000	14,718,000	1946	44,182,000	20,848,000	23,334,000
1926	32,200,000	16,964,000	15,236,000	1947	54,343,000	26,148,000	28,195,000
1927	30,700,000	16,964,000	13,736,000	1948	58,003,000	29,057,000	28,946,000
1928	34,000,000	20,000,000	14,000,000	1949	48,516,000	22,475,000	26,041,000
1929	37,600,000	21,339,000	16,261,000	1950	61,497,000	29,402,000	32,095,000
1930	26,600,000	15,000,000	11,600,000	1951	68,500,000	33,800,000	34,700,000
1931	18,300,000	10,982,000	7,318,000	1952*	62,900,000	30,600,000	32,300,000

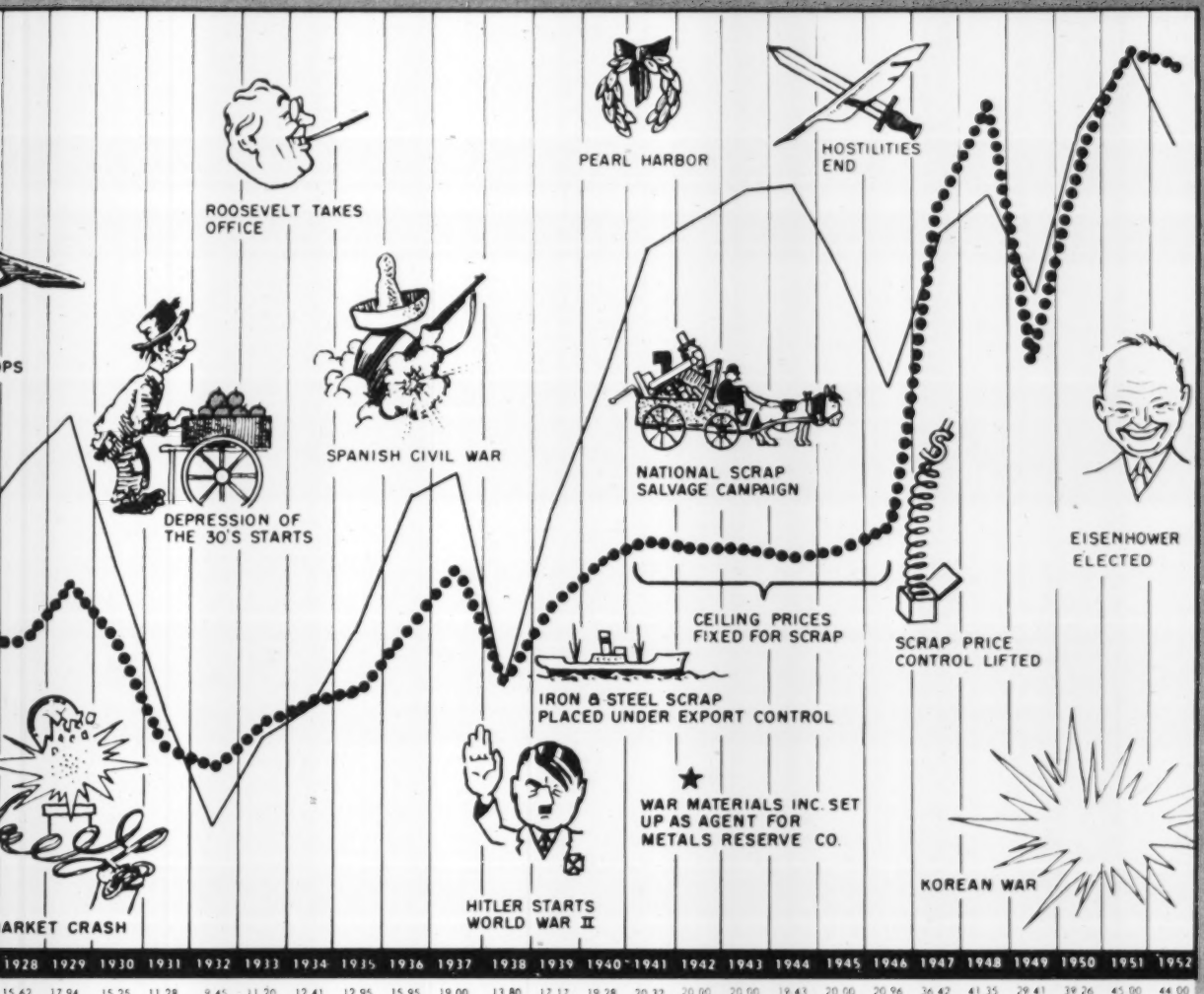
*Estimated.



MONTHLY AVERAGE SCRAP PRICES

(No. 1 Heavy Melting Steel, Gross Tons, Pittsburgh)

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	AVG.
1952	$44.00	$44.00	$44.00	$44.00	$44.00	$44.00	$44.00	$44.00	$44.00	$44.00	$44.00	$44.00	$44.00
1951	47.50	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	44.60	44.00	44.00	45.00
1950	30.00	31.65	31.60	32.88	38.10	44.25	40.50	43.60	44.00	44.00	44.00	46.50	39.26
1949	41.90	40.00	36.30	25.12	23.25	22.60	21.00	22.13	28.20	29.50	31.50	31.40	29.41
1948	40.30	40.44	40.25	40.25	40.25	40.25	40.75	42.75	42.75	42.75	42.75	42.75	41.35
1947	32.50	34.40	37.25	35.81	30.00	32.44	37.20	39.50	38.00	39.90	40.00	40.00	36.42
1946	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	23.00	28.50	20.96
1945	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
1944	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	19.00	16.95	17.15	20.00	19.43
1943	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
1942	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
1941	22.15	20.75	20.75	20.20	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.32
1940	18.15	17.75	17.05	16.45	18.00	19.90	19.55	18.75	20.15	21.30	21.50	22.75	19.28
1939	15.60	15.65	15.75	15.50	14.55	15.00	15.55	16.15	18.75	23.15	21.90	18.50	17.17
1935	13.50	13.25	12.40	11.70	12.00	12.25	12.30	13.25	13.45	13.65	13.65	14.05	12.95
1932	10.25	10.25	10.25	10.20	9.75	9.00	8.35	8.55	9.50	9.50	9.15	8.70	9.45
1929	19.00	18.60	18.50	18.50	17.85	18.30	18.45	18.90	18.45	17.30	16.30	15.10	17.94
1917	23.25	21.90	23.40	28.15	28.40	40.00	40.25	36.60	35.50	31.30	29.60	30.00	30.70



MONTHLY STEEL INGOT OUTPUT

(Thousands of Net Tons)

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	AVG
1952	9,136	8,657	9,404	7,991	8,204	1,639	1,626	8,498	9,062	9,806	9,446	9,930	7,783
1951	8,848	7,770	9,076	8,845	9,100	8,662	8,684	8,739	8,660	9,121	8,799	8,890	8,766
1950	7,941	6,803	7,497	8,224	8,564	8,143	8,082	8,242	8,204	8,752	8,023	8,355	8,069
1949	8,197	7,494	8,402	7,796	7,599	6,505	5,785	6,723	6,598	928	4,223	7,728	6,498
1948	7,481	6,948	7,619	6,224	7,581	7,265	7,076	7,447	7,425	7,997	7,798	7,781	7,387
1947	7,223	6,430	7,317	7,052	7,339	6,978	6,579	6,991	6,797	7,570	7,242	7,376	7,075
1946	3,873	1,393	6,509	5,861	4,073	5,626	6,619	6,925	6,556	6,952	6,458	5,761	5,550
1945	7,204	6,653	7,706	7,290	7,450	6,841	6,986	5,735	5,982	5,597	6,200	6,058	6,642
1944	7,593	7,194	7,826	7,594	7,703	7,234	7,498	7,499	7,235	7,621	7,279	7,366	7,470
1943	7,425	6,825	7,675	7,374	7,550	7,039	7,408	7,586	7,514	7,814	7,372	7,355	7,403
1942	7,125	6,521	7,393	7,122	7,387	7,022	7,149	7,235	7,067	7,585	7,185	7,303	7,169
1941	6,928	6,238	7,132	6,757	7,053	6,801	6,822	7,001	6,820	7,243	6,970	7,161	6,903
1940	5,765	4,526	4,389	4,100	4,968	5,657	5,725	6,186	6,056	6,645	6,469	6,495	5,582
1939	3,663	3,448	3,929	3,432	3,373	3,607	3,649	4,342	4,882	6,223	6,292	5,959	4,299
1935	3,279	3,170	3,274	3,017	3,009	2,581	2,591	3,332	3,228	3,591	3,600	3,512	3,182
1932	1,686	1,681	1,627	1,430	1,277	1,036	916	961	1,126	1,234	1,172	977	1,277
1929	5,115	4,920	5,761	5,627	6,009	5,573	5,514	5,614	5,147	5,154	4,002	3,300	5,267
1917	4,223	4,223	4,223	4,223	4,223	4,117	3,924	4,170	3,968	4,475	4,227	3,650	4,206

tle more than keeping pace with the enlargement in steelmaking.

Grows with the Needs—Since almost one-third of all scrap purchased in the open market is of the prompt industrial variety arising from fabrication of new iron and steel, this means as steel production and consumption rise more prompt scrap becomes available. Thus, for every three additional tons of purchased scrap required, one ton automatically is generated from fabricating operations. The remaining two tons come from obsolescence.

Normally, obsolescence occurs as articles and objects of iron and steel become available. The more new automobiles manufactured, for example, the more automobiles head for the graveyard.

Potential Scrap—More than 1.5 billion tons of steel are estimated now in use in this country. Eventually, almost every ton of this steel will find its way back to the steel mills and foundries, though the return trip will vary in time, subject to the vagaries of the scrap cycle as it applies to the separate articles and objects made of steel.

Barring war, or similar grave emergency, normal obsolescence, along with the scrap trade's ability to reach out for material, should assure suppliers sufficient tonnage to provide pretty much what will be demanded of them in normal times. Only in event of a serious emergency, it is felt, would government drives and similar stimuli be required to intensify the movement of dormant scrap to market.

They Kept Pace—While the impressive increase in scrap consumption over the years is attributable to changes in steelmaking practice in step with expanding use of steel and need for rapid melting, such enlarged use would not have been possible were it not for improved techniques developed by the scrap industry for collecting and preparing material.

From a relative infant early in the century, scrap collecting and preparing has grown to a business giant, comprising thousands of dealers maintaining scrap yards and employing over 200,000 persons in doing a business volume estimated well in excess of $1 billion annually.

INSTITUTE OF SCRAP IRON & STEEL OBSERVING SILVER ANNIVERSARY

Significantly, much of the trade's progress has taken place over the past 25 years during which time the industry's national trade association, the Institute of Scrap Iron & Steel Inc., has been a potent force for sound business statesmanship in the industry. Founded in 1928, this organization commemorates its silver anniversary at its 1953 convention in New York City, Jan. 11 to 13.

Fused in the heat of economic necessity when the scrap market was more or less disorganized and profitable operations were hampered by trading evils that resulted in casualties among dealers and brokers on an alarming scale, the Institute has since served as a guiding force in bringing the scrap business to its present high standing. Comparision of stable market conditions today with those prevailing prior to the Institute's formation is convincing testimony to the effectiveness of its program these past 25 years.

The Institute was formally launched on Aug. 1, 1928, when Benjamin Schwartz, the first administrative officer, set up office at 11 W. 42nd St., New York, following six months of organizing effort which started with a meeting of eastern dealers in February, 1928. Leadership was provided by 29 men comprising the first officers and executive committee, and the presidents of the first 12 chapters. Of these only 11 are living today.

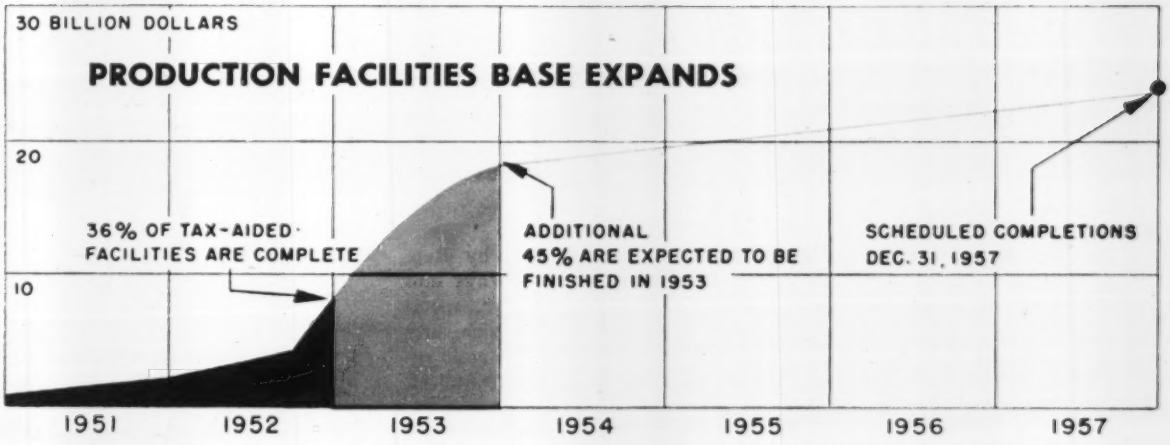
Originally the organization was conceived as a regional body known as the Eastern Scrap Iron Association. But after Mr. Schwartz joined as director general, its scope was enlarged from local to national, and chapters were set up throughout the country. Today the Institute has 1350 members in 24 chapters, membership extending to Canada and Europe.

After ten years as director general, Mr. Schwartz resigned in August, 1938, being succeeded by Edwin C. Barringer, at that time editor of *Daily Metal Trade*, and prior to that managing editor of STEEL, both Penton publications. Under Mr. Barringer as executive vice president, in which post he still directs the Institute's activities, the sound program for the industry conceived by Mr. Schwartz and the officers in the early days, has been expanded and aggressively pressed to the mutual advantage of both the scrap trade and consumers.

Objectives of the Institute are achieved through its many services, affording a means of communication among members, promoting co-operation and a high standard of business conduct, facilitating commerce through uniform specifications and standards, providing arbitration, and collecting and disseminating statistical and other information, as well as serving as liaison with the government, briefing its membership on important developments, conducting seminars on scrap, and generally promoting sound trade and public relations.

The story of the Institute of Scrap Iron & Steel, in many respects, is the story of the modern scrap iron and steel industry. Under its aegis, the trade has kept pace with the fast-growing economy of the nation, its scope, facilities and services expanding in step with the ever-rising needs of a scrap-hungry steel industry through World War II and the current cold war emergency.

If the scrap industry's impressive supply record of the past 25 years under the guidance of its national trade association means anything at all, it provides assurance of continued stellar performance in the months and years ahead in meeting the nation's needs.



Peak of mobilization expansion will pass with 81 per cent of present fast tax amortization projects to be completed by next December. New jobs will fill in the gaps

MOBILIZATION...

AMERICA is building up its defense mobilization base, as charts on this page show, but industry may not be able to generate the full strength that national security demands until 1955.

In a quarterly report of the Office of Defense Mobilization, Henry H. Fowler, director, cited gains made since the Korean War. These include doubling our armed forces, bolstering our allies' strength and increasing our military production facilities. ODM says production of military "hard goods" has been multiplied seven times.

Good Start—Industry's achievements have brought the free world to "the end of the beginning" in its battle with Communism. Important tasks remaining ahead include complete equipping of the nation's armed forces.

To assure the efficiency of the armed forces, industry must hold its lead in research, the ODM report continues. In radar equipment, ammunition and combat aircraft the majority of post-Korean models are not yet ready for production, and may not be for three years. Half of the new guns developed since mid-1950 are in production, while one-third of new combat vehicles are in the theory stage.

Mobilization Speed-up—A chart on this page shows the rate at which new production facilities, aided by fast tax write-offs, are completed. Some 15,000 projects with a value of $25 billion have been granted certificates of necessity, and roughly one-third are now finished. Although this represents the bulk of the defense mobilization base, new projects and new expansion goals are continually being added.

Edwin B. George is chairmanning an ODM committee which expects to come up with a mobilization base program by late February or early March. It will be predicated on the armed services' estimates of their needs for military hard goods in the first, second and third years of all out war, plus our experiences in World War II.

Common Defense — Military aid to North Atlantic Treaty nations has increased steadily since 1950. U. S. shipments to all allies averaged more than $200 million monthly in the last six months, double the 1951 deliveries.

ODM is confident that industry will complete its mobilization for defense without undue strain to the economy. As the production program levels off, many economic controls can be removed. During 1953, ODM expects the Controlled Materials Plan will be progressively relaxed. The agency will strive for continued controls on prices, wages, priorities and allocations, at least through the first half of 1953.

Military production will keep rising and add to the $129 bill on authorized since Korean war began in mid-1950

Military shipments, totalling $14.1 billion since mid-1950, continue high. Off-shore procurement will increase

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

Expect little tax relief in 1953. Tax reduction bills already in the hopper spell only politics. Real help pends Ike's foreign policy, defrayal of Truman committments

BUSINESSMEN should not be too much encouraged by the tax reduction bills already down the legislative hopper of the 83rd Congress. In Washington they generally are regarded as smart politics. Congressional leaders hope that tax relief can be granted but are making no promises.

Senator Styles Bridges, president pro tempore of the Senate, and Senator Taft emphasize that the first objective is to balance the budget. That will not be easy, particularly in view of the carry-over of $77 billion of obligations from the Truman administration which will have to be defrayed. While effective cooperation between an economy-minded administration and an economy-minded Congress can cut down substantially the cost of running the government, and particularly the Defense department, the question as to what additional expenses may be necessitated to implement the Eisenhower plan to adopt a foreign policy of "action" remains unanswered.

Tip-offs—The new tax bills are significant mainly because they reflect the current ideas of legislators as to the maximum amount of reduction that may be considered now. The principal bill, by the new chairman of the Ways and Means Committee, Rep. Daniel A. Reed, would make effective June 30 the 11 per cent reduction now slated for Dec. 31—on "lower and middle income groups." These brackets would net a 5.5 per cent reduction in their income taxes for 1953.

The potential relief to the higher-income brackets is less. Taxpayers in the highest brackets would get a cut of only 0.5 per cent. Mr. Reed also favors letting the excess profits die on the present expiration date of June 30. Proponents of such reductions are careful to state that they must be tied in with corresponding cuts in the federal budget.

No Long-Time Answers—An interesting bill introduced by Rep. Richard M. Simpson, a Ways and Means Committee member, specifies standards under which any firm or corporation could seek relief if it feels it is unduly penalized by the excess profits tax.

By the very nature of the problem, it is considered assured that no long-time answers to the tax problem will be forthcoming until late in the present session, and maybe not before next year.

FSS Buys Civvie Items . . .

Effective immediately, Federal Supply Service of General Services Administration is established as the required source of supply for all civilian-type items listed in the FSS Store Stock Catalog which are authorized by the military departments for local procurement.

That means that such items hereafter will be procured by FSS instead of by the armed services. The change has been implemented through a Munitions Board revision of Part 1, Section V, of the Armed Services Procurement Regulation entitled "Interdepartmental Procurement."

Probe Ore Alloy Content . . .

Research program just launched by the Bureau of Mines at its Pittsburgh Experimental Station aims at treatment of Cuban laterite ores to derive fullest benefits from their alloy contents. These are small—1.5 per cent chromium, 1 per cent or less of nickel, and about 0.1 per cent cobalt.

But the deposits run into billions of tons, so that the quantities of these elements involved are huge. The ores contain in the neighborhood of 40 per cent iron, so what the bureau is shooting at is pig iron with several per cent nickel (and cobalt) to which more nickel can be added, and chromium-containing slag with chromium content up to ore grade.

SCRUTINIZING PEGS AND HOLES . . . Army's new manpower officers

Manpower Officers for Army . . .

As part of its response to criticisms of one to two years ago that it was making wasteful use of manpower, the Army just graduated, at Fort Benjamin Harrison, Ind., its first class of "Manpower Management Officers." The new group of officers, and similar groups to come, are to have the specific responsibility of insuring that every soldier and civilian employee is properly assigned and that all duties are carried out with fewest number of man-hours.

"I believe," said Assistant Secretary of the Army Fred Korth, "that the Army's system of manpower controls today compares favorably with the best that is found in industry."

Decumentarily Speaking . . .

The 1952 edition of the Census bureau's best seller, the "Statistical Abstract of the United States," widely used by business and industry in formulating investment, expansion, production and marketing programs is off the press.

Many manufacturers will want copies of the HHFA-Cornell University report entitled "Practices and Precepts of Marketing Prefabricated Houses." It not only covers the economic problems involved in producing and selling prefabricated housing but has a list of manufacturers and dealers. Copies of both publications are available from superintendent of documents.

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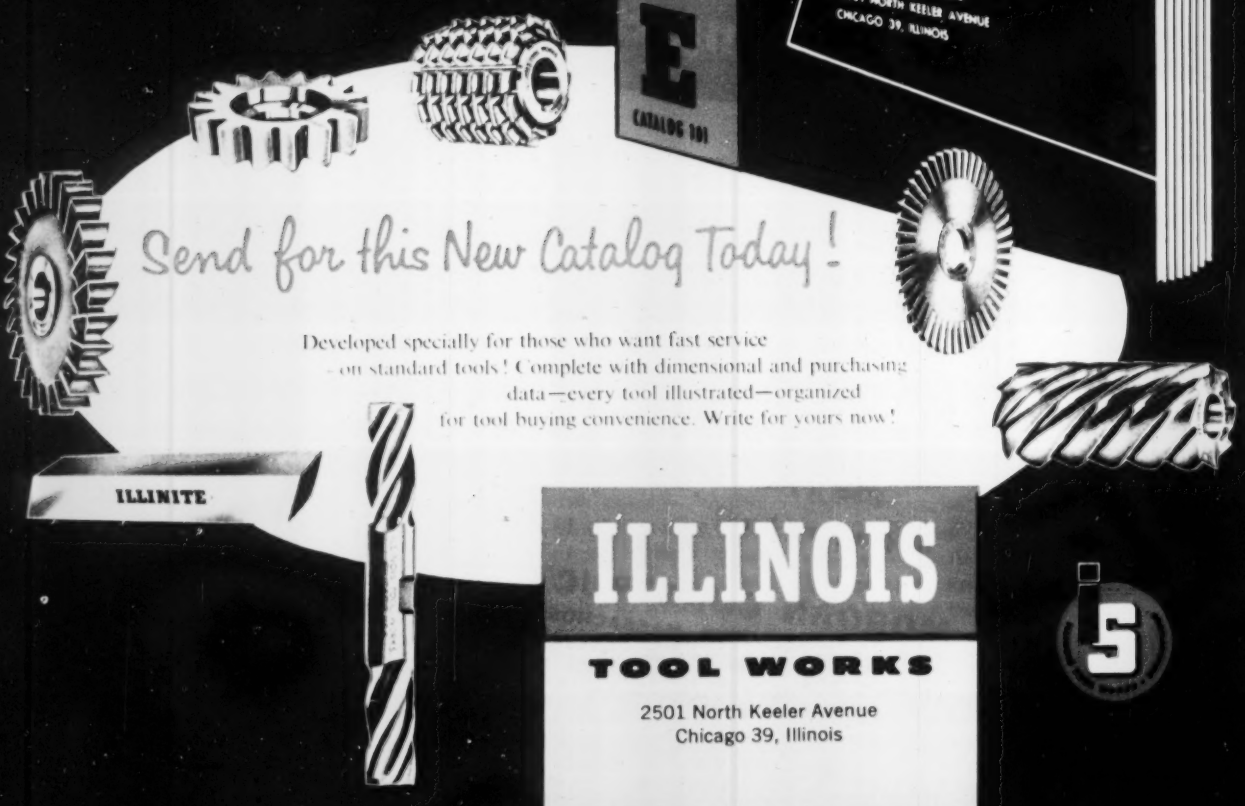

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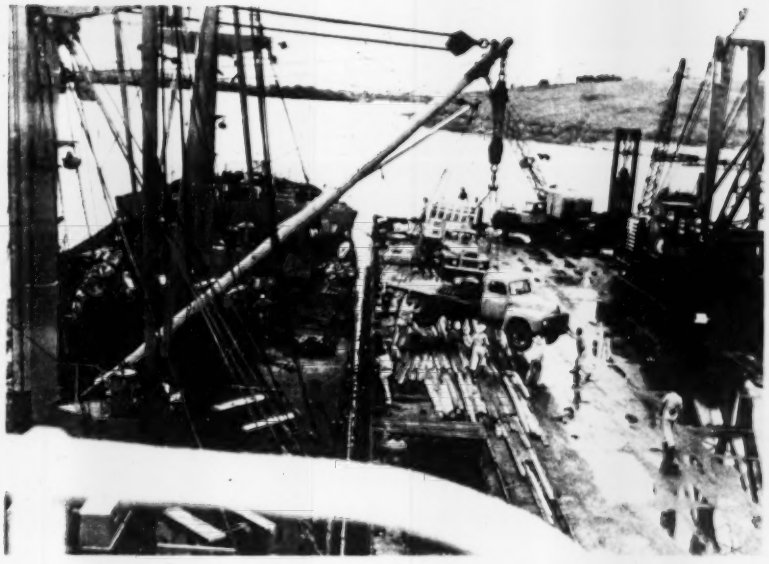


Puerto Ordaz Docks Ready for Cerro Bolivar Ores

New docks at Puerto Ordaz, Venezuela, receive equipment which will be used in further development of Cerro Bolivar iron ore deposits 90 miles to the southwest. The port was built 154.5 nautical miles from the mouth of the Orinoco river by the Orinoco Mining Co., a subsidiary of U. S. Steel Corp. Upon completion of the mining and handling facilities, ore will travel by rail from Cerro Bolivar to Puerto Ordaz, thence by ship to United States ports and U. S. Steel's furnaces.

European Steel Prices Wobble

Price changes for steel are coming in Europe as output catches up with demand. Belgium makes the latest adjustment; the Germans talk over others

THE YEAR 1953 will see basic changes in the European metalworking outlook. Steel output has been increasing steadily while manufacturer's backlogs have been gradually declining.

Phrases, such as "the first time since World War II" and "the first time in history", will probably be overworked during the coming year.

Here and Now—Here are examples which have already appeared: buyers of bigger automobiles in Britain can get immediate delivery and the waiting period for the smaller, more popular cars has been drastically cut for the first time since World War II. Imports of steel into Germany are now running four or five times as much as exports for the first time in German history.

Everywhere in Europe there is talk of price cuts on semifinished steel. Latest drop was a 10 per cent reduction by Belgium on exports to EPU (European Payments Union) countries. For dollar zone countries, the Belgian's basic price for merchant steel is $96 per metric ton. The Germans are unhappy about the price discrimination since the cost to them is $110.50 per metric ton on merchant bars and $110 per metric ton on medium and heavy sheets. But, the Germans themselves are talking about price cuts and experts there look for world market price declines to about $70 or $75 per ton on steel bars. Before Korea, the price had slipped in some cases to $48 per ton on steel bars.

Watch for more price adjustments and changes in steel distribution as the year progresses.

Banner Year for Exports

American exporters find they don't necessarily have to lose export sales even with currency problems and dollar-import cuts.

J. D. A. Morrow, president of Joy Mfg. Co., Pittsburgh, reports a record volume of foreign sales of mechanical mining equipment in the last fiscal year ended September, 1952. The company's American plants exported $12,491,000 and sales of its foreign subsidiaries totaled $10,209,000. Together, the total $22,700,000 worth of foreign sales represents one-fourth of the global sales of Joy during the fiscal year.

Westinghouse Electric International Co. says 1952 was the greatest year in the company's history for export appliance sales. Actual dollar figures were not released, but C. E. Bitzer, manager of appliance sales for Westinghouse International, says: "Sales in 1952 are expected to exceed those of 1951 by nearly 25 per cent and to about double those of 1949." Refrigerators continue to lead the list of major appliances sold in foreign markets, with automatic electric washers a close second. Electric fans account for the greatest percentage of Westinghouse small appliance sales in the foreign field.

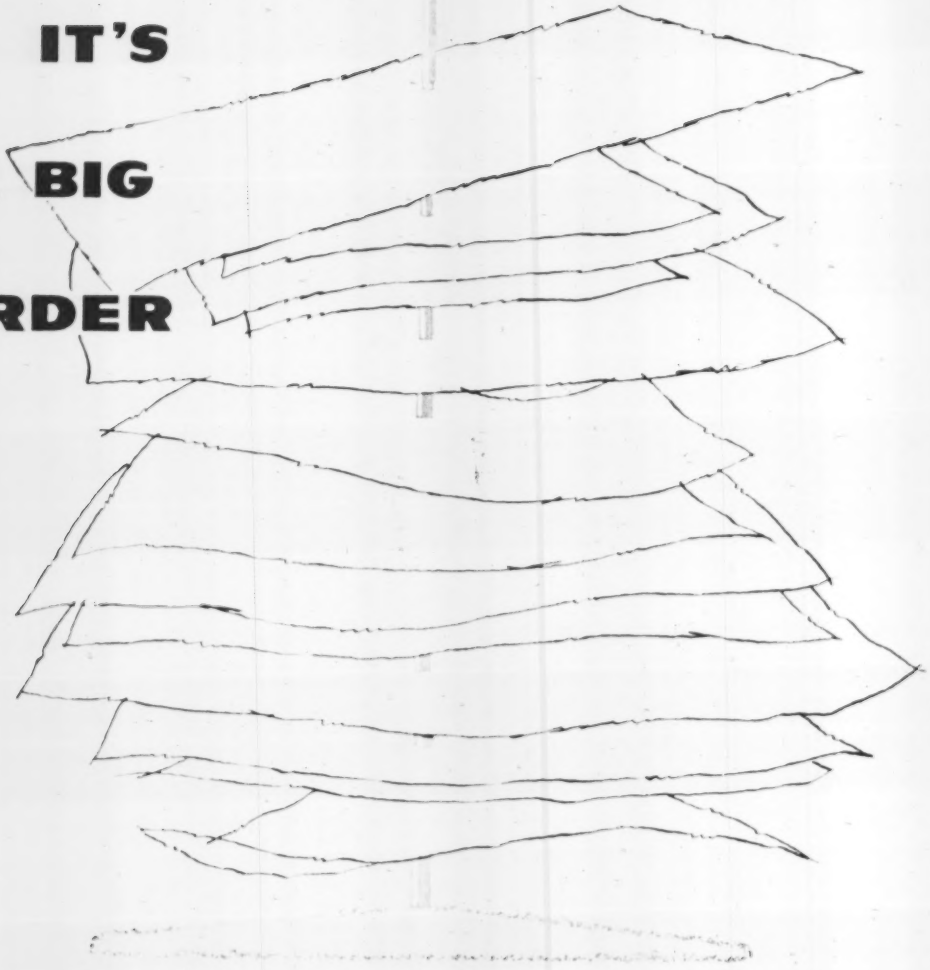
Two New for Holland

Two U. S. manufacturers went into business in Holland recently, one with a new plant, the other with a licensing agreement.

Ekco Products Co. has completed arrangements for the manufacture of high-quality stainless steel table flatware by N. V. Gerofabriek, Zeist, Holland. Ekco has similar arrangements with Societe France-Exploration, Thiers, France, and Tomado, N. V., wire housewares makers of Dordrecht, Netherlands. "Distribution of noncompetitive foreign-made goods strengthens our economy," says Edward Keating, president of Ekco International Corp., "and gives American buyers a wider range of choice. At the same time our friends abroad build up their dollar balances."

Eugene Caldwell, vice president and general manager of Hyster Co., Portland, Ore., announces a new firm, Hyster Europe, N. V., will produce certain Hyster materials handling products for the European market. The operation will occupy a new plant at Nijmegen, Holland, and will get underway about June 1, 1953.

IT'S A BIG ORDER



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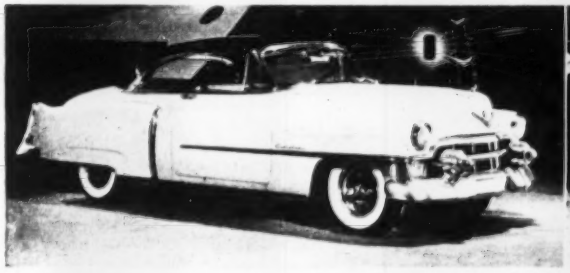
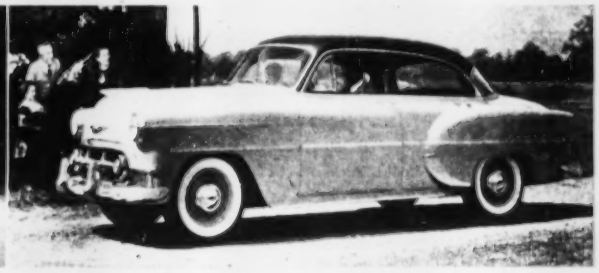
ROLLER BEARINGS

By H. C. TUTTLE *Detroit Editor*

Mirrors of Motordom





New Look in '53 for Cadillac and Chevrolet

Greater gasoline economy is expected from Cadillac's new 210 horsepower engine with 8.25 to 1 compression ratio and high valve lifts. New also are a 12-volt electrical system and low 3.07 to 1 rear axle ratio. Redesign of the 1953 Chevrolet line shows up in enlarged front and rear glass areas, new fender and hood contours and fresh grille treatment. Pictured are Cadillac's 62 Coupe de Ville, left, and Chevrolet's "Two-Ten" four-door

General Motors takes the automotive spotlight with introduction of 1953 models for Cadillac, Buick, Oldsmobile and Chevrolet. Pontiac came out early in December

DETROIT

NO ONE who read a newspaper or heard a radio last week could fail to note that 1953 models of Cadillac, Buick, Oldsmobile and Chevrolet were being introduced. And even while the echoes of these individual fanfares still reverberate the GM Motorama at New York's Waldorf Astoria will amplify the din and add some new drum beats to it.

This show, for all its magnificence, is just the crumbs. GM's cake is in the nation's dealer showrooms. The first helping served up by Pontiac Division reached the market early in December. Now come Cadillac, Buick, Chevrolet and Oldsmobile.

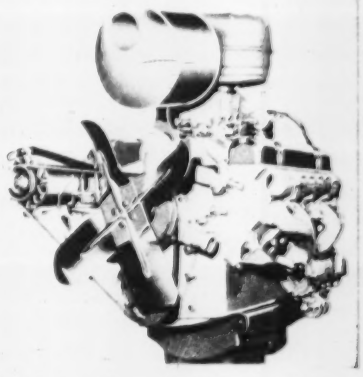
Solid Fare—By scraping off the frosting to see what the main ingredients of the four divisions' products baked up like, we can see some solid fare underneath. Each division used a different measuring spoon to get improved performance and better economy. All increased their horsepowers substantially; two—Buick and Chevrolet — redesigned their torque converter transmissions; Buick put in a long-awaited V-8 engine; and Buick, Olds and Cadillac went to 12-volt electrical systems.

Chevrolet — Appearancewise, Chevrolet takes on some of the front-end features of Cadillac. The honey-combed grille and front fender embossing from headlight bezel back to door are Cadillac-inspired. The body is lower than previously but the headroom and legroom space is increased. Overall length at the same time is reduced two inches by snuggling the bumpers closer to the body. Wheelbase is not changed. Whether because of the broader top, the more pronounced hood and trunk lines, or the wrap-around front and rear windows, the effect is a longer appearing car. A new series in four models designated "Bel Air," with a distinctive styling feature parallel bands of chrome trim on the rear fender surrounding a contrasting color and the Bel Air name has been added to give Chevrolet market penetration in a higher price class than it has previously reached.

Numerous engineering changes are incorporated in the '53s. Extensive reworking of the two power plants increased displacement, compression ratio and horsepower. The standard engine (for conventional gearshift) has had its bore and stroke increased. Displacement is 235 cubic inches from 216 in '52s. Compression ratio is up from 6.6 to 7.1 to 1. Horsepower is 108, against 92 last year. A reduction in rear axle ratio and

Oldsmobile Is Hotter

Oldsmobile revamps its electrical system to 12 volts with a larger 70-ampere-hour battery, new starter, generator, voltage regulator, lights and wiring. Capacity of the new 12-volt battery is nearly 30 per cent greater than 1952's model to carry the increased load of electrical accessories



Buick Changes to V-8

Golden anniversary celebration for Buick is a new 90° V-8 engine with a piston displacement of 322 cubic inches, 4-inch bore and 3.2-inch stroke. Compression ratio is 8.5 to 1. The new power plant develops 188 horsepower in the Buick Roadmaster and 170 in the Super at 4000 rpm

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the higher compression increases economy. Electrical system modifications have been made to put higher voltage at the spark plug gap. One of the more interesting electrical changes is use of nonmetallic high tension cables replacing copper in some wire to eliminate radio interference.

Core of this cable is linen impregnated with a semi-conducting material and enclosed in a neoprene jacket. An automatic choke is now standard. The engine used with Powerglide now has its own name Blue Flame and will be called completely new by the ad writers. Beside the changes made in the standard engine this one has aluminum pistons; eliminating the need for piston pin bushings, its bearings have been redesigned, and a full pressure lubrication system is used. This engine with compression ratio of 7.5 to 1 develops 115 horsepower, 10 more than last year's. Powerglide's changes are the same in principle as those of Dynaflow (described below). As the first low price car to take the plunge, Chevrolet will offer Saginaw Steering Gear's power steering device.

Buick—Fifty years have passed since David Buick roamed Flint streets looking for some one to stake him to $10,000. He found the men who would take a chance on his overhead-valve two-cylinder engine, and now three engine changes and millions of cars and dollars later, the division is more than ever wedded to the same design principles. Its new V-8 engine is engineered to have at least as promising a future as the Fireball straight eight which was introduced 22 years ago. Rated at 188 hp, with a compression ratio of 8.5 to 1, and a displacement of 322 cubic inches, the V-8's horsepower potential is much greater if and when higher octane gas permits its compression ratio to be increased to 12 to 1.

The new engine's installation was originally expected only in Roadmasters, but Buick announced that the Super will also have it. Using the four-barrel carburetor adopted in '52 models the engine develops its maximum horsepower. The engine in the Super series, with a two-barrel carburetor, turns out 170 hp. The new engine is more than a foot shorter and 180 pounds lighter than the in-line eight. The straight-eight remains the Special series power plant, but with an increased compression ratio of 7.6 to 1 from 7.2, it now develops 130 hp.

Auto, Truck Output

U. S. and Canada

	1952	1951
January	409,406	645,688
February	467,691	658,918
March	517,207	792,550
April	576,505	680,281
May	546,673	695,898
June	560,947	653,682
July	246,461	522,858
August	293,722	571,442
September	592,253	505,758
October	645,862	558,971
November	550,885	480,323
December		402,729
Total		7,179,161
Week Ended	1952	1951
Dec. 6	129,005	116,932
Dec. 13	121,590	115,627
Dec. 20	134,933	107,186
Dec. 27	102,558	39,488
Jan. 3	108,128	53,601
Jan. 10	135,000*	92,741

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary

Stylewise, the new Buicks are distinguished by eyecatching details. Headlights and rear fender styling are influenced by the experimental XP-300; a higher rear fender and application of chrome trim in the rear fender's embossing are easy to spot. Bolt-on wheelcovers, simulating wire spoke wheels and with a distinctive "V" symbol, are going to be a popular optional item at extra cost.

Roadmasters this year are being put on the Special's two wheelbase lengths. For the four-door four-holer this means a wheelbase reduction of 4¾ inches to 125½ inches. The two-door Roadmasters shorten up by the same amount to a 121½-inch wheelbase. All four Roadmaster models are reduced $135. Supers are up $125, while Specials come down $11 to $86.

Called the Twin Turbine Dynaflow, the new Buick torque converter answers the complaints of users who deplored the engine roar as it wound up to get going and slippage when accelerating. The unit's redesign incorporates a secondary turbine and planetary gear set to get an increase in torque multiplication. In action the oil flows from the pump through the first turbine then on through the second turbine before being directed through the stator and back to the pump. The first turbine drives the ring gear which is attached to the output shaft. This turbine delivers the initial torque, multiplied by the planetary gearing when the car gets under way. As car speed increases the second turbine does increasingly more of the work until at cruising speed the second turbine is doing all the driving and the first turbine free wheels. A 200 rpm reduction in engine speed during take-off and acceleration reduces the engine roar.

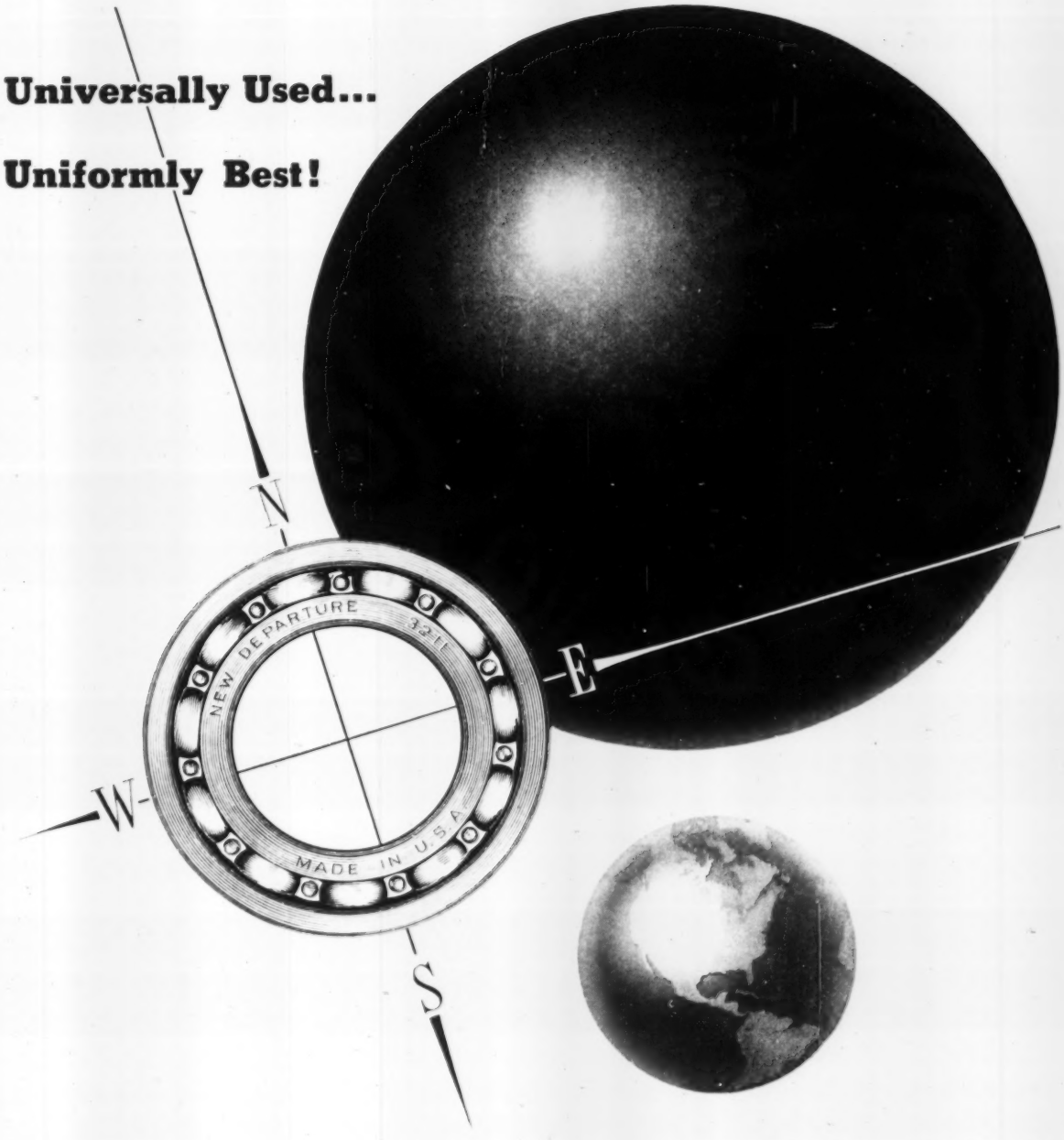
Cadillac -- More stainless steel wrapping around the front fenders, Le Sabre-like bumper guards, rocker panel and lower fender application of chrome comprise major exterior styling changes for Cadillac. Under the hood is an engine now rated at 210 hp. Compression ratio is 8.25 to 1. Virtual elimination of back pressure and better breathing of the engine is claimed. Better economy without sacrifice in performance results from the compression ratio increase and a lower rear axle ratio.

Oldsmobile—New thrust for the Rocket engine in all Oldsmobiles is provided by an 8 to 1 compression ratio and a 12-volt electrical system. The Super 88 and 98 series, with four-barrel carburetion develops 165 hp, up five points. The deluxe 88 also raises its horsepower rating five points to 150.

The 98 series is two inches longer over-all than last year's. Appearance changes of the line begin at the grille, the middle grille member being an airfoil section supported by the bumper guards. Above and behind this is a squared-off and longer hood. Side view shows a slimmer diagonal sash on Super 88s and 98s and new stone shield treatment on the straight-topped rear fenders. The Hydra-matic indicator dial has been removed from the steering column and now, electrically actuated, is part of the instrument cluster. As an extra cost option a resilient crash pad forming the top of the dash panel is available. Air conditioning is offered (for $594) by Olds, Buick and Cadillac.

Universally Used...

Uniformly Best!



• Throughout the world, New Departure ball bearings are in universal use . . . in motor vehicles and machinery . . . in instruments and implements . . . in conveyor lines and textile looms. Providing support for moving parts, they reduce friction, wear and maintenance . . . permit bigger loads and better design.

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PLUS

ADVANTAGES OF HOLLOW BARS

- No drilling
- Finish boring is first step
- Less machining time
- Less scrap loss
- More parts per ton of steel

EQUALS

ADVANTAGES OF "GRAPH-MO HOLLOW-BAR"

New "GRAPH-MO HOLLOW-BAR" combines the faster machining and longer wear of Graph-Mo with the economy of a hollow bar section.

Graph-Mo* graphitic tool steel now comes with a built-in hole! "Graph-Mo Hollow-Bar" is a new Timken* steel product that combines all the proven advantages of Graph-Mo with the economies of a hollow bar section.

If you make ring gages, dies or other ring-shaped tool steel parts, you can eliminate drilling. The hole is already there. Finish boring is your first step. You reduce machining time, cut scrap loss, save steel.

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Due to the free graphite in its structure, Graph-Mo machines 30% faster than other tool steels. Machinability tests prove it! And the free graphite, together with diamond-hard carbides, give it unusual resistance to wear. User reports prove it outwears other tool steels an average of 3 to 1.

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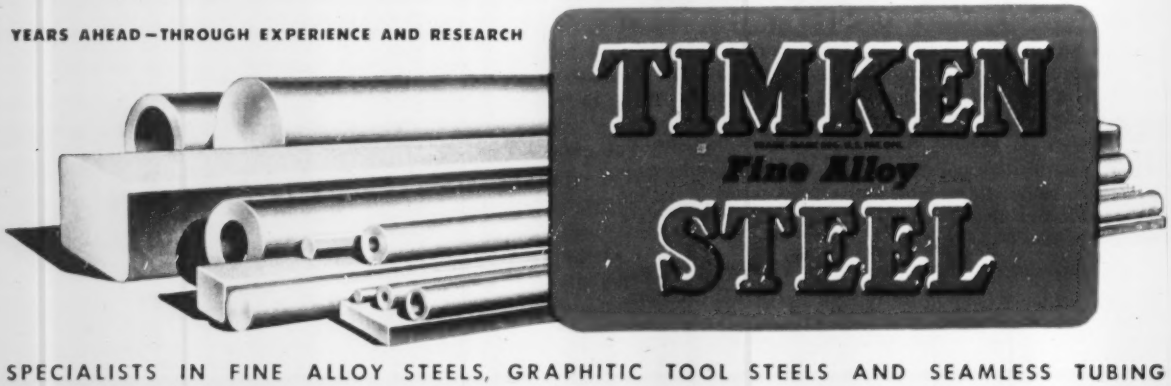
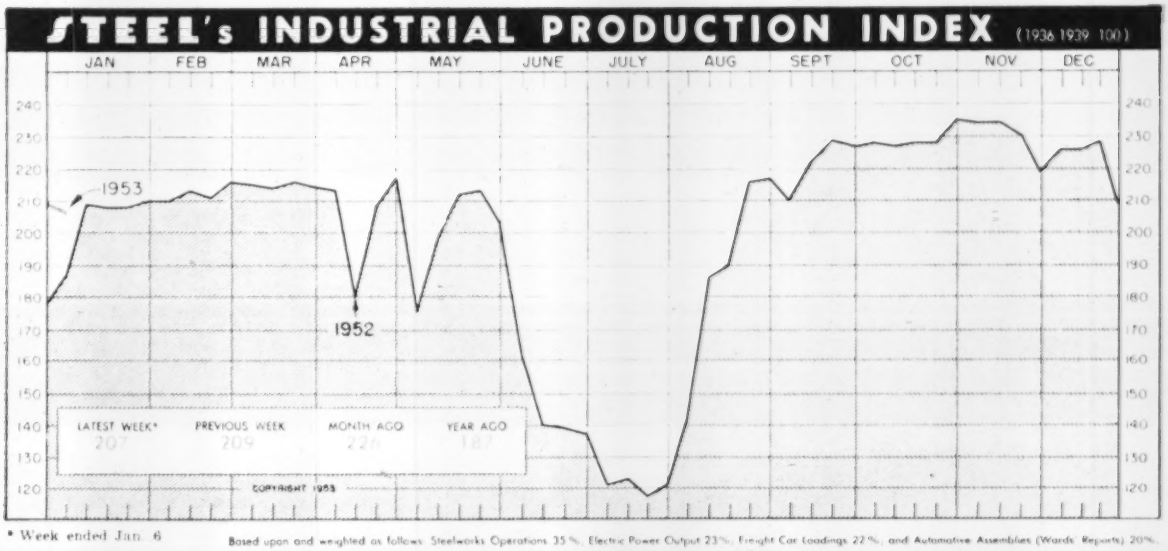
For complete information on this new Timken steel product write today to The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH



SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING

The Business Trend



* Week ended Jan. 6

Based upon and weighted as follows: Steelworks Operations 35%, Electric Power Output 23%, Freight Car Loadings 22%, and Automotive Assemblies (Wards' Reports) 20%.

Business is moving at a fast pace. Many metalworking executives expect to maintain strong production throughout most of the year. Index remains at a high level

BUSINESS is entering the first quarter at high-for-the-season momentum. Industrial production is soaring about 11 per cent over the nation's output a year ago.

This over-the-year rise is shown in STEEL's industrial activity index. In the week ended Jan. 3, the red line on the chart took a seasonal decline to 207 per cent of the 1936-1939 average, compared with a drop to 187 per cent in the comparable week of last year. Strong output throughout the U. S. is indicated by prime indicators of production.

Slight Declines—Steel mills in the week ended Jan. 3 were producing at 106 per cent of the capacity the industry had on Jan. 1, 1952. Utilities were generating 6 per cent more electricity than in the first week of last year, while freight car loadings are estimated to have risen nearly 7 per cent. Automotive companies during the holiday weeks showed the smallest seasonal decline by trimming their auto-truck assemblies by only 20 per cent. Last year, automotive production in the first week in January plunged to around 35 per cent of normal turnout.

Behind these increases are three factors: Rising demand for both defense and consumer products and business optimism due to the forthcoming change in presidential administration.

Defense production is expected to rise throughout most of 1953. Unfilled government orders now stand at $81 billion, an assurance of sizable defense output for a long time ahead.

The civilian production scene is also bright. Makers of consumer durables are particularly optimistic over this year's prospects. Since mid-summer of 1952, consumers have shown an increasing interest in appliances and other durable items. Many manufacturers see a year of firm demand and an increasing supply of materials. Some companies are trying almost anything to boost their civilian output.

Time for a Change—The Republican administration, aside from decontrolling materials, is expected to show more understanding toward businessmen's other problems. Many businessmen expect a certain degree of tax relief in the next four years. Business optimism, now reflected in the stock market, is also mirrored to some extent in industrial output. Manufacturers who shelved new designs before the election, are now dusting them off and starting to assemble new products.

Steel Production Sturdy . . .

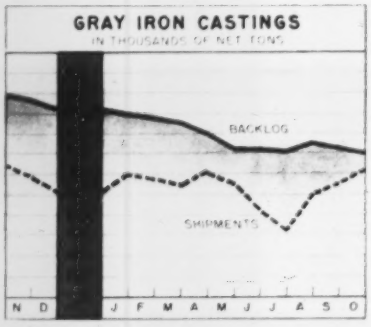
With high demand for steel apparently assured for the first quarter, steel mills are continuing to keep their production high. The American Iron & Steel Institute estimates that furnaces in the week ended Jan. 10 poured 2,213,000 net tons of steel.

Auto Output Still High . . .

Automotive companies are out to keep production strong in the first quarter.

With this goal before them, manufacturers of passenger cars and trucks started the year by trimming their output far less than seasonally. U. S. auto-truck production in the week ended Jan. 3 totaled 103,176 vehicles, *Ward's Automotive Reports* estimated. This turnout is more than double the number of cars and trucks assembled in the U. S. during the first week of 1952.

The automotive industry is expected to return quickly to production levels attained before the strike. U. S. and Canada are estimated to have produced 135,000

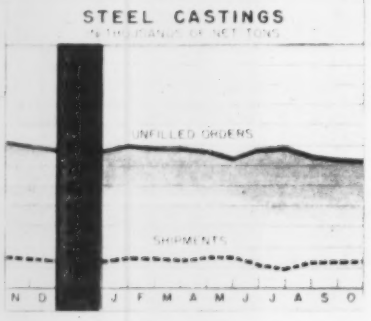


Gray Iron Castings

Thousands of Net Tons

	Shipments		Backlogs*	
	1952	1951	1952	1951
Jan.	1,999	1,364	1,801	2,268
Feb.	1,155	1,234	1,766	2,392
Mar.	1,172	1,449	1,711	2,390
Apr.	1,205	1,363	1,614	2,337
May	1,101	1,396	1,456	2,229
June	854	1,305	1,145	2,162
July	636	1,029	1,410	2,208
Aug.	1,002	1,219	1,513	2,145
Sept.	1,119	1,115	1,451	2,055
Oct.	1,233	1,302	1,392	1,983
Nov.		1,134		1,934
Dec.		1,032		1,847
Total		13,768		

* For sale. U. S. Bureau of the Census

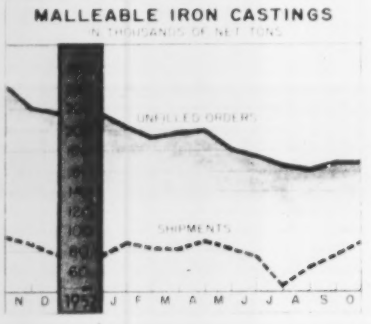


Steel Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1952	1951	1952	1951
Jan.	183.7	174.1	869.3	675.4
Feb.	174.6	161.0	856.9	702.1
Mar.	173.7	190.7	857.1	729.7
Apr.	175.1	181.9	843.0	746.9
May	173.6	189.2	801.7	783.7
June	141.6	184.7	846.5	806.1
July	119.0	147.2	853.0	930.0
Aug.	150.2	177.1	896.4	943.2
Sept.	158.4	160.7	781.9	918.0
Oct.	165.2	189.6	772.9	894.5
Nov.		156.7		862.9
Dec.		161.1		846.1
Total		2,093.3		

* For sale. U. S. Bureau of the Census

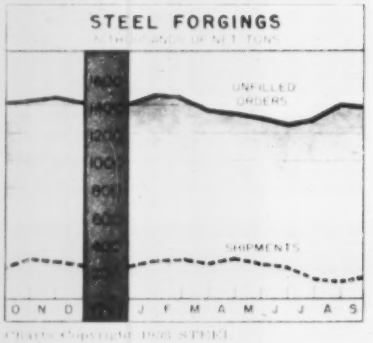


Malleable Iron Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1952	1951	1952	1951
Jan.	84.9	92.5	263	234
Feb.	82.9	86.0	263.1	246
Mar.	81.0	101.7	256.9	267
Apr.	89.3	97.3	248.2	256
May	81.8	100.8	250.4	275
June	74.1	93.7	273.1	256
July	45.3	76.8	266.6	263
Aug.	63.7	90.7	262.8	249
Sept.	79.9	82.3	268.4	245
Oct.	88.1	93.9	268.6	238
Nov.		88.2		221
Dec.		76.0		215
Total		1,082.9		

* For sale. U. S. Bureau of the Census



Steel Forgings

Thousands of Net Tons

	Shipments		Backlogs	
	1952	1951	1952	1951
Jan.	274*	138	1,472*	709
Feb.	242	129	1,461*	681
Mar.	266*	161	1,360*	715
Apr.	272*	154	1,349*	724
May	263*	266*	1,319*	1,201
June	224*	249*	1,248*	1,264
July	132*	226*	1,296*	1,561
Aug.	121*	240*	1,399*	1,436
Sept.	130*	224*	1,392*	1,417
Oct.		280*		1,427
Nov.		246*		1,466
Dec.		282*		1,441

U. S. Bureau of the Census. * Data for these months based on reports from commercial and captive forge plants with monthly shipments of 50 tons or more. Previous data based on reports from commercial forge shops producing 500 tons or more per year.

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Issue Dates on other FACTS and FIGURES Published by STEEL

Construction	Nov. 24	Gear Sales	Dec. 22	Ranges, Elec.	Dec. 8
Durable Goods	Sept. 22	Indus. Production	Dec. 22	Ranges, Gas	Dec. 1
Employ., Metalwkg.	Oct. 27	Ironers	Dec. 22	Refrigerators	Dec. 8
Employ., Steel	Dec. 15	Machine Tools	Dec. 15	Steel Shipments	Nov. 3
Fab. Struc. Steel	Dec. 22	Pumps	Dec. 8	Vacuum Cleaners	Dec. 22
Foundry Equip.	Dec. 29	Prices, Consumer	Dec. 1	Wages, Metalwkg.	Nov. 17
Furnaces, Indus.	Dec. 29	Prices, Wholesale	Dec. 29	Washers	Dec. 29
Freight Cars	Dec. 29	Radio, TV	Dec. 15	Water Heaters	Dec. 8

cars and trucks in the week ended Jan. 10.

Savings Up, Debts Up . . .

People are saving more; people are getting further into debt. This apparent contradiction is seen in reports by the Federal Reserve Board on consumer credit and the Securities & Exchange Commission on individual saving. This means that one segment of the population is quickly going into debt, while the other group is salting money away. Consumer debt rose $2.8 billion to $22.8 billion in the year ended Dec. 1. On the other hand, individual savings in that year climbed rapidly after the spring taxpaying season of 1952. Liquid savings of persons in the U. S. reached $5.6 billion in the third quarter, the highest total savings since the fourth quarter of 1945.

Manufacturers of civilian goods could well look into these diverse trends. The buying segment of the nation may have about spent its limit. This may be the time to introduce revolutionary products. Civilian industries this year may be forced to step up sales techniques to lure dollars from the public.

Industrial Production Up . . .

Industrial production in December reversed its normal trend for the month by inching up instead of down. Booming defense and consumer production outbalanced the holiday slowdown at the end of the month. The Federal Reserve Board estimates that the nation's industrial output in December rose 1 point to 234 per cent of the 1935-1939 average. Durables production last month rose 5 points to 305 per cent, while nondurables output remained at 197 per cent of the 1935-1939 average.

Coal Demand To Increase . . .

Producers of bituminous coal may look forward to increasing demand from the nation's manufacturers. So says the Appalachian Coals Inc., which predicts increased soft coal demand by all major coal using industries except the railroads. Bituminous mines of the U. S. will turn out 483.5 million

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	106.0	103.0	98.0
Electric Power Distributed (million KWH)[3]	6,500[1]	6,921	6,662
Bituminous Coal Output (daily av. 1000 tons)[3]	1,041	1,701	1,317
Petroleum Production (daily av. 1000 bbl)[3]	6,620[1]	6,594	6,187
Construction Volume (ENR millions)[4]	$185.0	$154.5	$159.1
Automobile, Truck Output (Ward's units)[3]	108,128	102,558	53,601
TRADE			
Freight Car Loadings (unit 1000 cars)[3]	700	521	613
Business Failures (Dun & Bradstreet, number)[3]	89	95	126
Currency in Circulation (millions)[5]	$30,578	$30,732	$29,143
Dept. Store Sales (changes from year ago)[3]	+ 57%	+ 4%	21%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)[3]	$16,384	$20,168	$17,897
Federal Gross Debt (billions)[5]	$267.1	$266.9	$259.4
Bond Volume, NYSE (millions)[3]	$12.6	$14.0	$11.2
Stocks Sales, NYSE (thousands of shares)[3]	7,400	6,997	5,700
Loans and Investments (billions)[6]	$78.8	$79.0	$74.9
United States Gov't. Obligations Held (billions)[6]	$32.6	$32.9	$32.5
PRICES			
STEEL's Weighted Finished Steel Price Index[7]	181.31	181.31	171.92
STEEL's Nonferrous Metal Price Index[8]	215.4	213.2	244.3
All Commodities[7]	109.5	109.3	113.6
All Commodities Other Than Farm and Foods[7]	112.7	112.8	116.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1951, 1,999,035; 1952, 2,077,810. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939 = 100. [6]1936-1939 = 100. [7]Bureau of Labor Statistics Index, 1947-1949 = 100. [8]Not available.

tons of coal this year, or about 19.5 million tons more that soft coal production in 1952.

Laundry Equipment To Rise . . .

Makers of home laundry equipment are expecting to hang up a record or near-record sales volume in 1953. Production of washers, ironers and dryers this year should equal or top the industry's all-time high of 5 million units produced in 1950, says Frederick M. Mitchell, president of the Home Laundry Manufacturers' Association.

Matching present high demand, manufacturers of household washers in November sold 293,079 units, more than 11 per cent over sales in November, 1951. Sales of automatic tumbler dryers in November totaled 74,370 units, or 41 per cent over the same month a year earlier. Ironer sales that month, on the other hand, aggregated 19,724 units, or 0.4 per cent under factory sales in November, 1951.

More Loads by Rail . . .

Freight car loadings in the first quarter are expected to rise 1.7 per cent over the first quarter of 1951. So says the Association of American Railroads, after surveying its 13 regional shippers advisory boards. Railroad shipments of automobile trucks may increase 19 per cent, while vehicle parts will rise 27 per cent. Shipments of iron and steel may rise 2.8 per cent, while loadings of other metals are expected to increase 2.4 per cent.

Structurals May Tower Higher...

Despite possible declines in housing and industrial construction during 1953, producers of fabricated structural steel hope to raise production to meet increased demand from commercial, military and other construction activities. The American Iron & Steel Institute says a new record in structurals output may be reached this year, if Washington quickly relaxes materials controls. Preliminary reports show that shipments of structurals totaled 2.6 million tons in 1952, compared with 2.7 million tons in 1951, the decline resulting from the steel strike.

Trends Fore and Aft . . .

Sales of the gearing industry dipped 6 per cent in November . . . New rubber consumption in November rose 9 per cent . . . Payroll in the iron and steel industry in October rose 13 per cent over October, 1951 . . . Machine tool builders are saying the expected pickup in defense orders is slow developing.

. . . of scrap strip

Quickly. . .

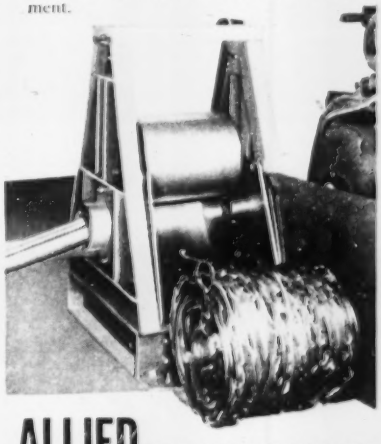
with an Allied Scrap Baler

. . . simple, inexpensive, electrically operated. Forms densely packed bundles 19" x 19", about 400 lbs. Wound up in a few minutes. Needs only one man.

Sell Bundles of Steel

Profitably. . .

. . . saves time, clears floor areas. A profitable means for quick salvaging right at shearing operations. Produces compact, saleable bundles ready for shipment.



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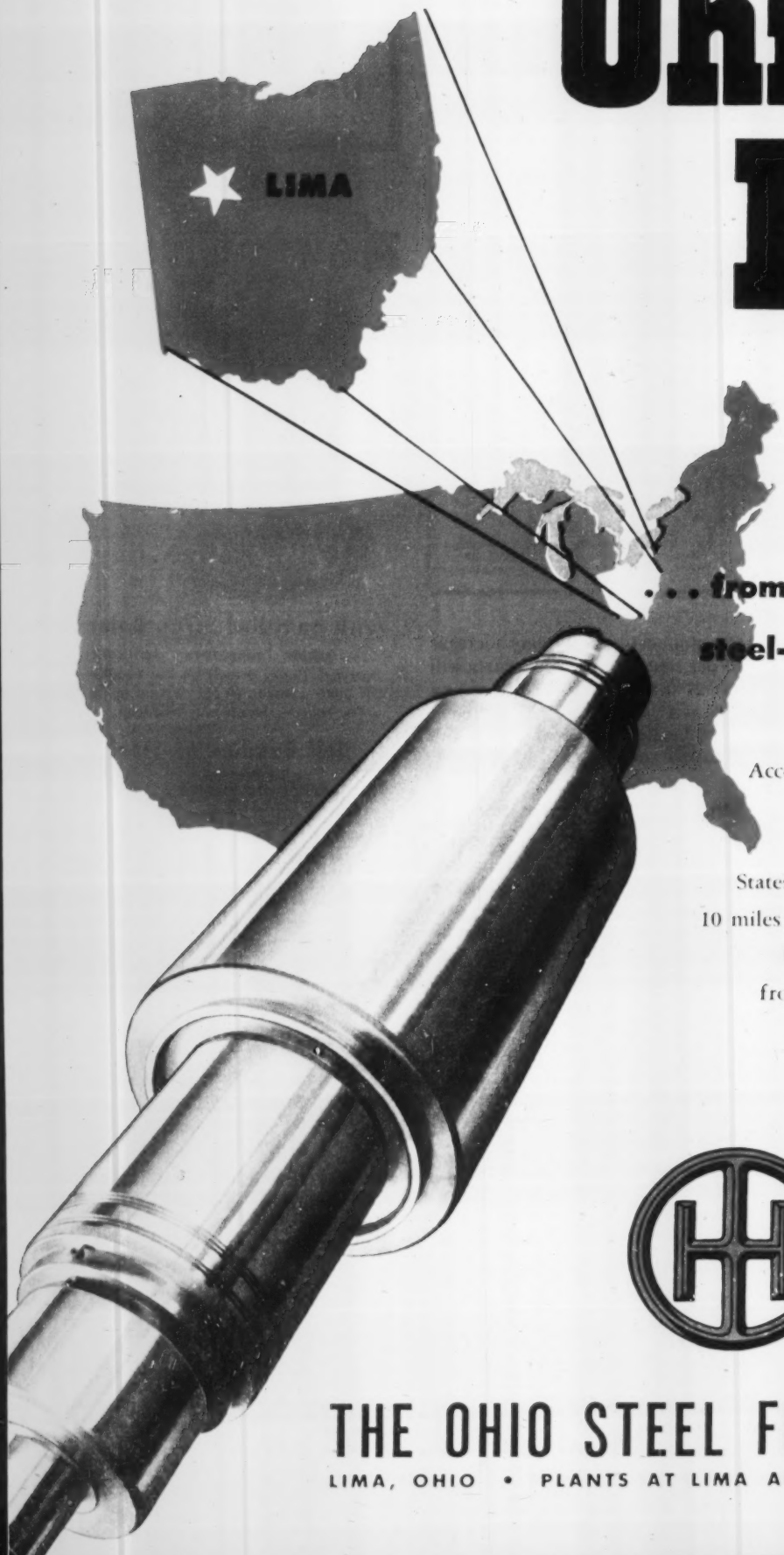

. . . from the center of steel-making production

According to the American Iron and Steel Institute, the center of the United States steel-making capacity is just 10 miles North of Lima, at Beaverdam, Ohio. Your Ohio Rolls come from virtually the center of this capacity.

THE OHIO STEEL FOUNDRY CO.

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Men of Industry

GEORGE B. McMEANS
. . . V. P.-operations at Kaiser Steel

VAN H. LEICHLITER
. . . AS&W vice president-operations

O. M. MARQUARDT
. . . mfg. manager at Tocco

George B. McMeans was appointed vice president in charge of operations for **Kaiser Steel Corp.** with headquarters at the Fontana, Calif., plant, where for the last two and a half years he has been works manager.

James P. Curran was made purchasing agent for **Mine Safety Appliances Co.**, Pittsburgh, to succeed **Henry B. Stafford**, named superintendent of production control.

Harry W. Poole becomes director of quality control for **Superior Tube Co.**, Norristown, Pa. He formerly was with Brown Instrument Division, Minneapolis - Honeywell Regulator Co. **Richard L. Hoff** was made development metallurgist.

R. G. Schrock was promoted to executive vice president, **Euclid Electric & Mfg. Co.**, Madison, O. He has been a vice president since 1936.

The Watertown, N. Y., Division of **New York Air Brake Co.** appointed **George E. Johnson** assistant to the general superintendent; **Floyd E. Lendrum**, acting foundry superintendent; **Robert W. Carpenter**, foundry metallurgist; and **Charles J. Carr**, general foreman of the foundry.

Van H. Leichliter was elected vice president-operations, **American Steel & Wire Division**, U. S. Steel Corp., Cleveland. Since Feb. 1, 1950 assistant vice president-operations, he now succeeds **Walter F. Munford** who assumed the presidency of the wire division Jan. 1.

William G. Whyte was made assistant to vice president of **United States Steel Corp.** Formerly assistant director of public relations for U. S. Steel in Chicago, he now takes over his post in Washington.

WILLIAM G. WHYTE
U. S. Steel Washington post

O. M. Marquardt was made manufacturing manager, Tocco Division, **Ohio Crankshaft Co.**, Cleveland. Formerly with Budd Co., he joined Tocco in 1918.

Columbia Electric Mfg. Co., Cleveland, appointed **Homer W. Sussman** general sales manager. He has held various positions in the company's engineering and sales departments since affiliation in 1935.

Appointments in the casting division, **Aluminum Co. of America**, include **Sanford H. Bennett** as chief industrial engineer, with offices in Pittsburgh, to replace the late **Rodney C. Rankin**. Mr. Bennett was works manager, Buffalo Works, and is succeeded by **H. E. Cook**. **Norbert C. Hilbrecht** was named plant superintendent at Buffalo and is succeeded by **Sherwood Willard** as chief industrial engineer, Buffalo.

Joseph V. Smith was elected chairman of the board and chairman of the executive committee and **James H. Knowles** as president, **Hubbard & Co.**, Pittsburgh.

Ralph N. Fitzpatrick was appointed Cleveland district manager, **Electro Metallurgical Co.**, division of Union Carbide & Carbon Corp. He succeeds **E. E. Wright**, who con-

tinues with the company as a consultant in the Cleveland area.

Joseph A. Pfaff was appointed special sales representative for **Latrobe Steel Co.** He continues headquarters in New York where he is succeeded as district manager of the New York branch by **W. J. Kennelly. Theodore H. Fortmeier** was appointed district manager of the new Milwaukee branch office.

Named to head up the fabricating division of **Atlantic Steel Co.**, Atlanta, is **B. W. Bird,** who, for the last ten years, has been manager of the company's manufactured products sales department. He has been with Atlantic Steel since 1934.

Samuel H. Wood was appointed manager of the Marion Forge Division plant, **Eaton Mfg. Co.**, Cleveland. He has been chief engineer for the last 18 years with Timken-Detroit Axle Co.'s Forge Division.

South Chester Corp., Lester, Pa., elected **William C. Hale Jr.** as vice president. He has served since 1946 as Southco's manager of operations.

Louis Allis Jr., formerly vice president-sales, was elected a vice president of **Louis Allis Co.**, Milwaukee, and joins with his brother in overall active management of company operations. **C. G. Skidmore,** sales manager, was elected vice president-sales and also performs as general sales manager.

LOGAN T. JOHNSTON
. . . heads sales as Armco V. P.

WALLACE B. QUAIL
. . . Armco's sales manager

Armco Steel Corp., Middletown, O., elected **Logan T. Johnston** vice president in charge of sales and **Wallace B. Quail** as manager of the sales division. Mr. Johnston, formerly general manager of sales, succeeds the late J. A. Ingwersen.

Vapor Heating Corp., Chicago, appointed **William C. Keeran** executive engineer. He will supervise engineering, research and design of company products. He also continues as vice president in charge of Roth Mfg. Co., subsidiary.

Richard E. Ballentine was made plant manager for **Westinghouse Electric Corp.'s** welding-electrode plant soon to be constructed at Montevallo, Ala. Until completion of the plant, which is expected in September, 1953, Mr. Ballentine will continue as development engineer on brazing alloys, motor and control division.

Robert Guelcher was made industrial engineer by **Ajax Flexible Coupling Co. Inc.**, Westfield, N. Y. He was assistant works manager of Uniflow Mfg. Co.

W. M. Martin, formerly vice president-sales for Crittall Inc., Waukesha, Wis., was appointed assistant manager, steel window department, **Ceco Steel Products Corp.**, Chicago.

Arthur L. Morgan was made chief purchasing agent for the Natrium plant of **Columbia-Southern Chemical Corp.**, New Martinsville, W. Va.

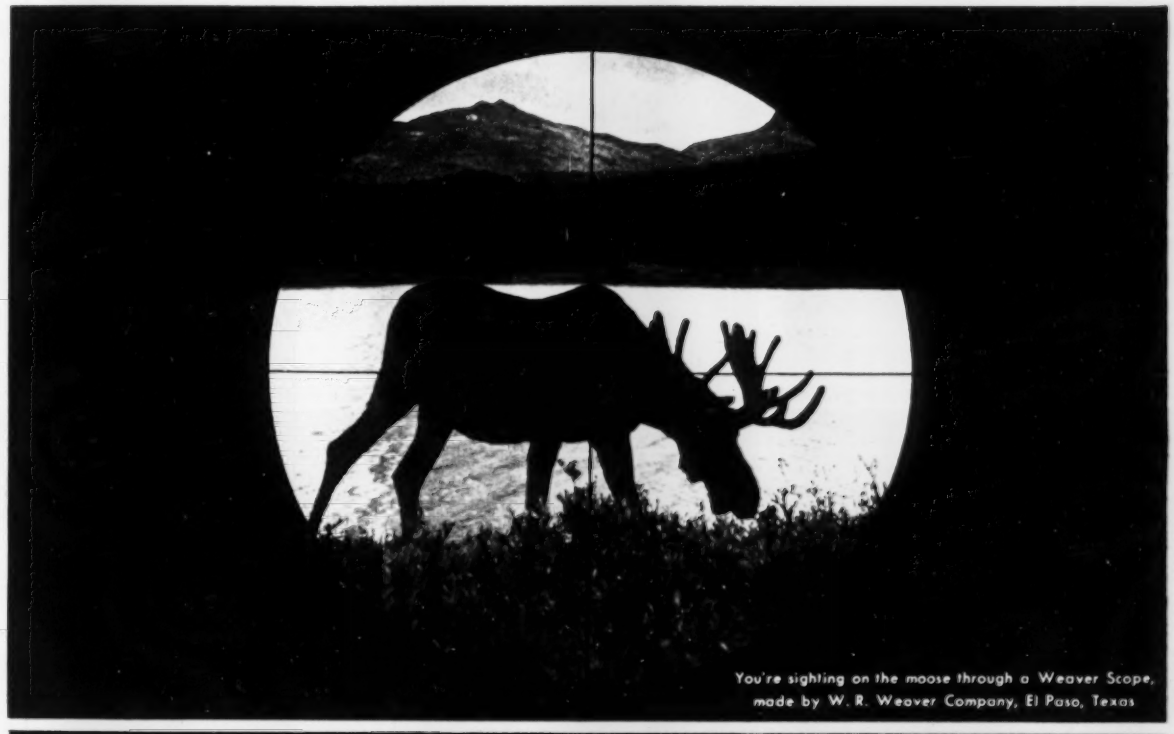
United States Pipe & Foundry Co., Burlington, N. J., appointed **Carl N. Brown** sales manager for cast iron pipe.

Durant Mfg. Co., Milwaukee, elected **William W. Winkler** president to succeed his father, **William K. Winkler,** now chairman of the board. **Robert B. Winkler** was made vice president and **Leo A. Nourie,** manager of the eastern division at Providence, R. I., was elected secretary. **G. F. Redmond** becomes a director.

Alexander M. Cadman Jr. was elected treasurer and general manager, **A. W. Cadman Mfg. Co.**,

LOUIS ALLIS JR.
. . . promoted by Louis Allis Co.

C. G. SKIDMORE
. . . Louis Allis V. P.-sales



You're sighting on the moose through a Weaver Scope, made by W. R. Weaver Company, El Paso, Texas

The Superior Tube That Puts You "On Target"

Hitting specification bull's-eyes to help our customers hit their production targets is a Superior specialty.

A case in point is illustrated above. The customer, W. R. Weaver Company manufactures high-quality telescopic sights for sporting and target rifles. The carbon steel tube in which the lens elements, reticule and eye piece are mounted must be strong and rigid. Tube material must have excellent machining qualities to permit fast, economical, precision working. Because salability depends a good bit on fine appearance, the tube must be extremely smooth and free from pits and scratches. This is particularly true of the larger sizes where tube ends are expanded, making imperfections more evident. Inside surface must also be smooth and to accurate dimensions.

Ordinarily you might expect tubing to fit such requirements for smoothness plus temper and machinability would be a "premium" item carrying extra charges for special handling.

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If you have need for fine, small tubing to do a tough job well, check with us. We can probably fill your requirements from the stocks of our distributors who are located in principal cities. Write Superior Tube Company, 2005 Germantown Ave., Norristown, Pennsylvania.

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Certain analyses (.035" max. wall) up to 1⅛" O.D.

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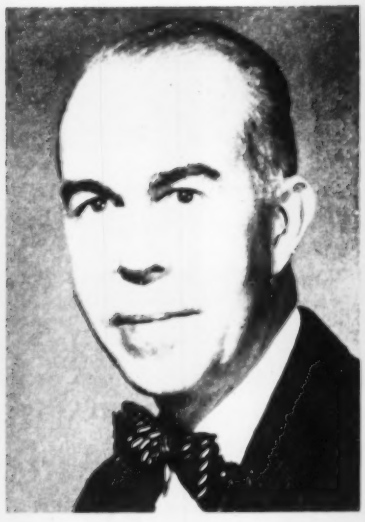
HANS K. REITZ
. . . Colonial Broach factory manager

IRVING T. BENNETT
. . . Revere Copper & Brass V. P.-mfg.



F. C. CAMPBELL JR.
. . . Scaife purchasing agent

Pittsburgh. **M. D. Roberts** becomes secretary and **Adam Komoroski** foundry superintendent.

Hans K. Reitz was appointed factory manager, **Colonial Broach Co.**, Detroit. Since 1947 he has served as superintendent of machine construction. In his new position he succeeds **William Kukuk**, resigned to devote full time to sales of Colonial drill jig bushings.

J. R. Alexander was appointed general sales manager, **Quaker Rubber Corp.**, division of H. K. Porter Inc., Philadelphia.

Irving T. Bennett was appointed vice president-manufacturing, **Revere Copper & Brass Inc.**, New York. A director of the company since 1951 and a vice president since 1944, he continues to head up the company's aluminum operations at Baltimore with headquarters in New York. His successor at Baltimore is **Alexander N. Aird**, formerly works manager.

Skinner Electric Valve Division, Skinner Chuck Co., Norwalk, Conn., appointed **William E. Rogers** as sales manager. He formerly was with General Motors Corp.

F. C. Campbell Jr. was appointed purchasing agent, **Scaife Co.**, Pittsburgh, which he joined in 1944 as assistant auditor. **Harry L. Oberlin**, for 42 years director of purchases, has retired.

Hubert J. McCormick was appointed sales manager, Caldwell plant, **Link-Belt Co.**, Chicago, succeeding **Erwin A. Wendell**, currently on leave.

Donald U. Kudlich was made manufacturing co-ordinator for the machinery divisions of **Food Machinery & Chemical Corp.**, San Jose, Calif.

OBITUARIES...

Charles H. Currier, 66, chairman of **Kewanee-Ross Corp.**, Buffalo, died Dec. 22.

Lyman D. Adams, 61, vice president, **Associated Spring Corp.**, Bristol, Conn., died Jan. 2.

Robert J. Weber, 58, assistant manager, central sales district, **Westinghouse Electric Corp.**, Pittsburgh, died Dec. 28.

Chester O. Barnes, sales manager, Hoist Division, **Harnischfeger Corp.**, Milwaukee, died Dec. 17.

Arthur C. Bishop, 74, former secretary and director of **Oglebay, Norton & Co.**, Cleveland, died Jan. 1. He also held executive positions with many of the companies associated with Oglebay, Norton & Co. He helped organize Ferro Engineering Co. in 1929 and served as its secretary and a director for many years. In 1951 he was made chairman of its board.

H. E. Sawyer, 71, formerly vice president and treasurer of **Macwhyte Co.**, Kenosha, Wis., died Dec. 28.

Raymond W. Vonasch, 40, manager of federal and marine sales for **Ward Leonard Electric Co.**, Mt. Vernon, N. Y., died Dec. 2.

Joseph K. Harrison Sr., 74, long associated with **Armco Steel Corp.** in open-hearth practice, died Dec. 20 at his home in Butler, Pa. He retired in 1945.

W. E. Karnuth, 49, district sales manager, **Peter A. Frasse & Co. Inc.**, Syracuse, N. Y., died Dec. 16.

W. Selwyn Ramsay, 79, founder and president, **Bay City Shovels Inc.**, Bay City, Mich., died Dec. 20.

Albert J. Doermann, 70, chairman of the board of **Titan Abrasives Co.**, Chicago, died in Florida Dec. 30.

W. E. Byrne, 58, midwest district manager, **Simonds Abrasive Co.**, Chicago, died Dec. 27.

J. J. Egan, 63, former officer and part owner of **Aluminum & Brass Co.**, Lockport, N. Y., died Dec. 29.

M. Homer Forster, 74, vice president, **John M. Forster Co.**, Rochester, N. Y., died Dec. 26.

STANDS UP UNDER THE SEVEREST FORMING

WICKWIRE

HARD DRAWN MB SPRING

WIRE

...Selected and Preferred for Zig-Zag Spring Wire in Automobile Seat and Back Cushions

Hard Drawn MB Spring Wire produced by Wickwire is used extensively as zig-zag spring wire in the construction of the latest ribbon type of spring units for automobile seat cushions.

Such wire demands the maximum degree of strength, ductility and uniformity in order to withstand the extremely severe deformation necessary in the fabrication of these springs. Painstaking care must be exercised in the selection of the right steel and in subsequent processing operations.

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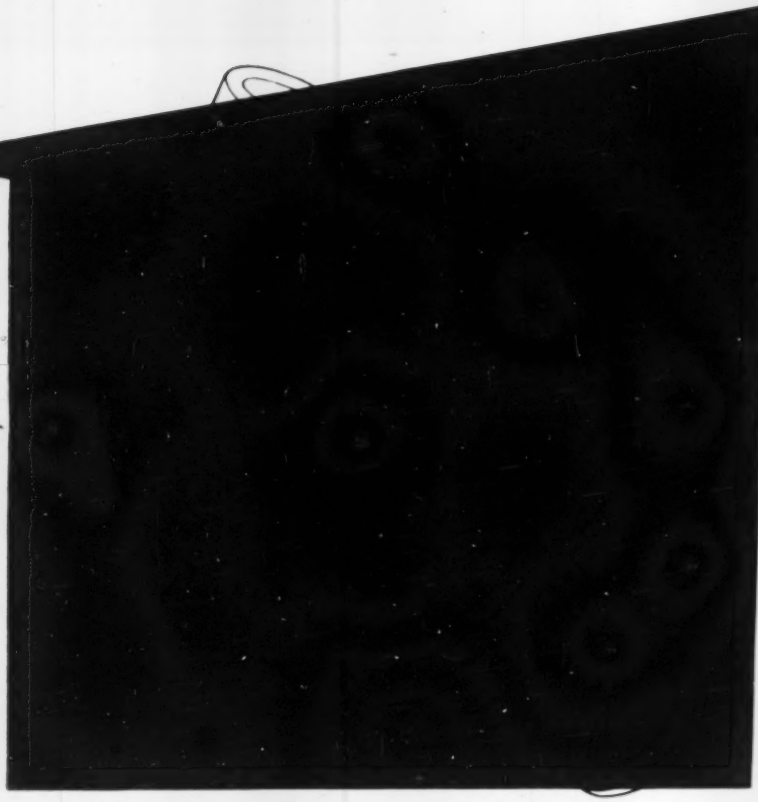

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Production and Engineering NEWS AT A GLANCE

CANNED MOTORS—Motors driving hot water circulating pumps for a nuclear reactor have both the stator and rotor encased in stainless steel. What is the air gap in a conventional motor is filled with flowing hot water, the same fluid that is being pumped through the reactor circuit. Leakage must be kept small so the motor can't drive the pump through seals. Rotor must be contained within the fluid circuit and is continuously exposed to water that is hot both as to temperature and radioactivity. The motors and integrally built pumps designed for the atomic powered submarine must also pass the Navy test for high shock.

TWO WAY SQUEEZE—Producing high pressure ferrous forgings weighing about a ton is a job that calls for unusual techniques and equipment. When Cameron Iron Works found it necessary to change from castings to forgings to meet job requirements, it was necessary to have a new press built unlike any others available. The press decided upon and now in operation has a 5000-ton capacity on the main vertical ram and two horizontal rams rated at 2000 tons. For most forgings the side rams hold the split dies together while the vertical ram displaces metal into the cavities of the die and pierces although the process is sometimes reversed when shape of part requires horizontal piercing. p. 66

DEPENDABILITY CHALLENGED—How dependable are the findings of the National Bureau of Standards? That is a question raised by the Senate Small Business Committee on finding that results of tests by two private institutions Massachusetts Institute of Technology and Catholic University on a commercial product designed to prolong the life expectancy of lead acid storage batteries are contradictory to results of similar tests by the bureau. The product is a battery additive and is produced by Pioneers Inc., Oakland, Calif. Tests by the two universities were conducted at the request of the committee as a public service and at no cost to the government. They supported the manufacturer's claims while the bureau reported the additive had no beneficial effect.

MANGANESE RECOVERY—A more efficient hydrometallurgical recovery of manganese from low grade ores is now made possible by a proper chemical regulation of two soluble salts, the Bureau of Mine reports. The process involves increasing control of the proportions of manganese sulphate and dithionate to each other. Best recovery is achieved when either all sulphate or all dithionate results from the rapid reaction that takes place when sulphur dioxide and manganese dioxide react together. In the past, the correct proportions in which they form was an unknown quantity. Bureau investigators found that important variables such as acidity and water ratio effectively influence the formation of dithionate in leaching manganese ores with sulphur dioxide. Properly controlling the ore and sulphur feed rates should make it possible to increase or decrease dithionate salt formation.

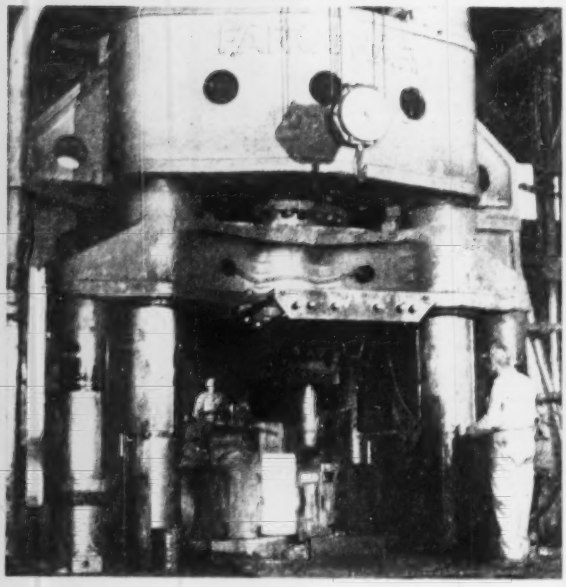
PROGRESS IN COATINGS—A review of design and fabrication data shows that some of the coating applications considered impossible just a short time ago are now becoming routine operations. There are certain rules to follow in metal preparation and in product design, but by and large the enamel experts can whip most of the problems they encounter. Some engineers claim that the best piece for coating is a half dome made of enameling iron that has a 4-foot diameter. For some unknown reason, a coating sprayed on a curved surface presents a smoother appearance than that on a flat surface. Keep away from sharp corners wherever possible. p. 72

SHOOTING DEMONSTRATION—Companies providing safety devices for employees, especially safety goggles, find effectiveness of the program is diminished by an unwillingness to take advantage of valuable yet free protection. It's at least partly due to the sales job that hasn't been done. General Electric Co. developed a demonstration method that is making believers of heretofore reluctant employees in their turbine plant. A gun is rigged in a demonstration device to shoot steel balls at a pair of eye-glass lenses. The ball bounces off the safety glass but shatters the ordinary lens. Since the demonstration safety men have experienced a rush of business from previously reluctant workers.

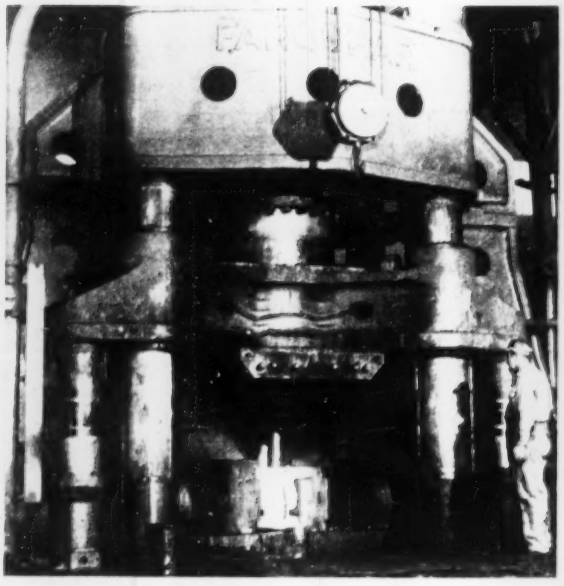
OUT OF THE MIST—When an oil-mist lubrication system was installed on a tinning line the old problem of contaminated solution disappeared. Biggest reason is the absence of over-lubricating element. Substantial reductions also came in maintenance. Nine months after the first line was set up on the new system, another line was converted. In that nine-month period, the first line had no bearing failures. p. 80

SMALLER SHOPS SHARE—Rapid tax write-offs are possible for smaller manufacturers to cover much of the cost of converting facilities to processes requiring less tin in the manufacture of cans. Small Defense Plants Administration announces that 13 per cent of the $31 million in capital authorized as eligible for rapid tax amortization under the conversion program will be set aside for plants employing less than 1000. Authorizations granted thus far cover only a small portion of the amount included in the entire program.

Metalworking Outlook p. 29 Market Outlook p. 97



Manipulator set heated billet in working position while the horizontal rams are retracted and split die is opened



Billet is blocked down to desired height for final forging by blocking ram located immediately behind punch

Two Way Press PRODUCES

Main vertical ram has 5000-ton capacity and two horizontal rams are rated at 2000 tons. Techniques developed broaden field of shapes and patterns possible

PERFECTING a new method for producing heavy press-forged parts enables Cameron Iron Works Inc., Houston, to produce equipment capable of withstanding extremely high pressures. Company's main products are blowout preventers, valves and christmas tree manifolds for controlling the gas pressures encountered while drilling and after an oil well is brought into production.

Advent of deeper and deeper drilling in search of new oil and gas reserves, encounters increased pressures in proportion to the greater drilling depths. Drilling and completion control manifolds made by Cameron must be of the highest quality to withstand the higher pressures. Each assembly is given a hydrostatic test, as high as 15,000 psi, as the final manufacturing step.

Formerly the company used steel castings for most of the components and experienced considerable difficulty.

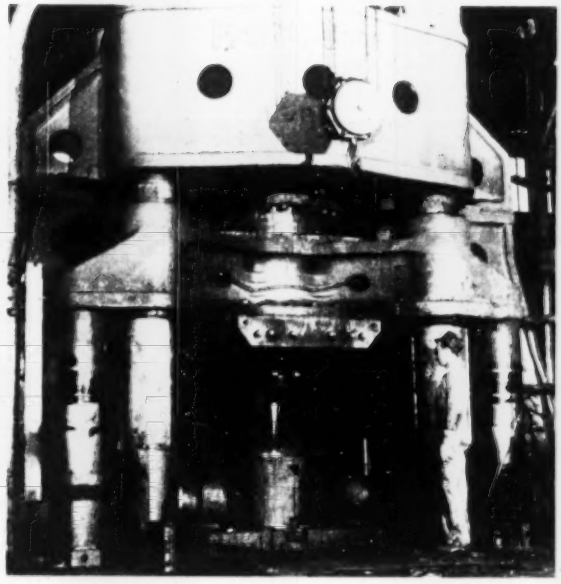
During the machining operations, sand holes or other imperfections were frequently encountered necessitating welding and remachining. Such defects would sometimes be detected only after the finished product was subjected to the routine hydrostatic test. Occasionally these units were considered beyond repair and had to be scrapped. Lost machining and testing time on imperfect castings could and did run into a substantial expense.

Hunt Better Way — Difficulty with steel castings caused an investigation to be launched for determining whether steel forgings could be produced to accommodate the designs of established products. Forgings were considered since they offer some metallurgical advantages and usually reduce the manufacturing cost of finished products.

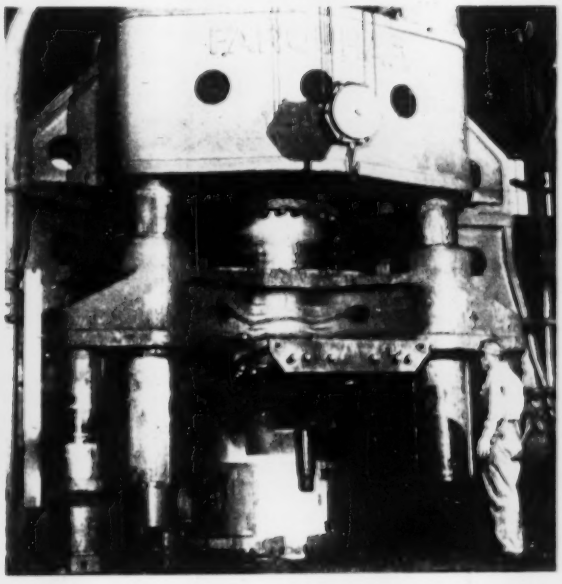
Closed-die press forgings from nonferrous metals and alloys were being produced successfully, as were some relatively small and simple designs of steel. However, equipment that would press-forge 2000-pound well heads and other large products of intricate shape was nonexistent.

New Idea—After a period of research to determine the feasibility of expanding the established limits of conventional press forging practice, the company decided to build a forge press for split die forgings, incorporating horizontal rams as well as the conventional down-acting rams.

Although a large forge press of this design to handle heavy steel forgings had never been built, the method appeared practical and the



Side rams are extended to close die around the billet holding it in place and piercing punch enters work



Side rams with die retracted and piercing punch raised out of the bore of finished tubing head spool forging

HIGH PRESSURE PARTS

Set of split dies and piercing punch for a casing head spool illustrate the size and type of work handled in Cameron's press forging installation

A. B. Farquhar Co. was commissioned to build it.

The press has a capacity of 5000 tons on the main vertical ram and two side, or horizontal, 2000-ton rams. For most forgings the side rams hold the split dies together while the vertical ram displaces metal into the cavities of the die and pierces. For some forgings the side rams may be used to pierce or displace metal while the die is held closed by the main horizontal ram.

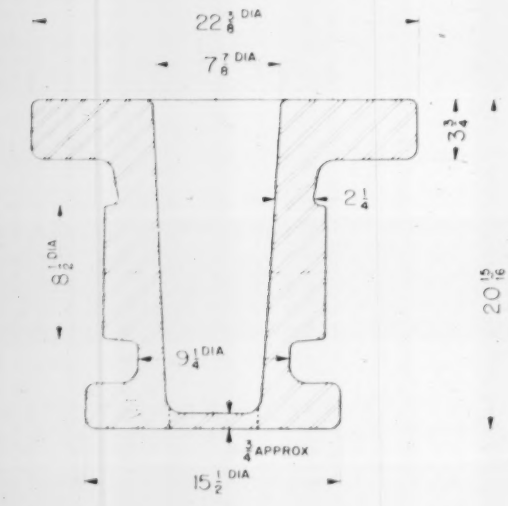
Moving Metal — A section through a double flanged well head press-forged in a split die is illustrated. Utilizing the vertical ram to forge and pierce the billet, the steel displaced by the punch flows into the flanges and outlet bosses on each side of the well head. The thin wafer of metal ahead of the punch is sheared or cut out with a torch as is the flash along the outside where the dies are split. Forgings of this type are made in various sizes up to approximately 1900 pounds individual weight, usually of AISI-4132 steel. They have also been successfully produced from type 410 stainless.

Also shown is a section through a ram-type tubing head body. In this case the vertical ram is utilized to hold the split die together while the side rams do the forging. The steel displaced by punches carried by the side rams flows to fill the die and shape the part.

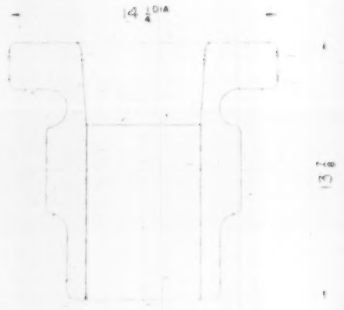
Fancy Figures — Another intricate shape produced by this method is a valve body of the general contour illustrated. In what is one of the most drastic forging processes in use today, this body is produced in a single operation from a round billet of the approximate diameter of the bonnet flange. The metal extrudes through the neck opening between the body and the flange, and out to fill the flange cavity.

The methods of press-forging developed by Cameron approach the broad field of intricate shapes and patterns that has been limited heretofore to steel castings.

Principal design considerations for the closed-die process of forging are proper displacement of hot metal being forged in the die and extraction of the finished forging. The chief limitation is size. The amount of pressure required in any particular press forging operation varies with depth of cavity, thickness of parts and analysis of the steel, and varies from 5 to 35 tons per square inch. Therefore, the size of the product is limited by the projected area.



Double flanged well head



Solid lines show press forging, dotted lines same part if drop forged

Attractive Savings—There are a number of advantages of the Cameron forging process as compared with conventional methods of forging and casting, lower manufacturing cost being one of the most important. Average cost of press-forgings in the rough is less than the cost of steel castings because of a much lower labor content. Actual prices vary from less than the cost of castings in simple shapes and cheap dies, to comparable costs in more intricate shapes and more expensive dies.

During the period since the company has press-forged its well heads, valve bodies and other products, the loss of machine work due to bad forgings is practically nil. In a comparable period before press-forgings were available, the loss in manufacturing time resulting from bad castings was a large item in the cost of the finished products.

Forged to Shape — Press-forgings produced in split dies need practically no draft and there is little or no flashing to be removed from the rough forging. Conventionally forged members necessitate a certain amount of draft requiring additional machining time to remove in order to shape the product to the desired design of the finished part.

An accompanying illustration contrasts a press-forged casing head (solid lines) with the same design (dotted lines) produced on a large drop hammer. Note amount of draft which must be removed and the additional metal which must be taken from between the bosses and the flange on the hammer forging, both of which cost machining time and loss of steel. On the other hand, the press-forged member comes from the die with no excess stock except that allowed for finish on the surfaces requiring machining.

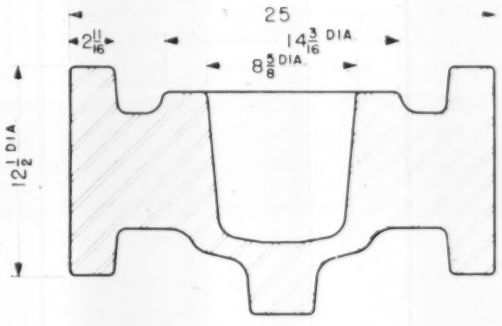
Another interesting item in connection with the relative manufacturing cost of press-forged versus cast steel products is the saving in cutting tools, such as thread chasers. Prior to the time when Cameron switched from castings to press-forgings for the bulk of its products, the machine shop wore out, or broke, an average of 11 sets of chasers for large casing sizes monthly. Not more than two sets of chasers are now required per month.

Favorable Facts—From a metallurgical standpoint, the differences between good forgings and good castings are small. The primary difference lies in the fact that with forgings the grain flow can be controlled to give the optimum pattern in the finished product, whereas this is not possible even with the best of castings.

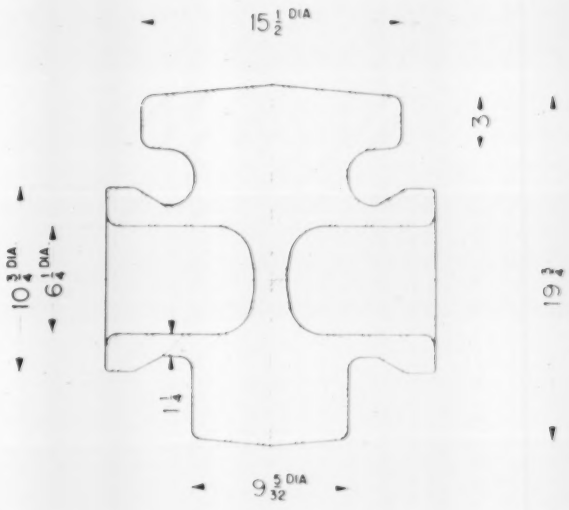
From the practical standpoint, the chief difference resides in the fact that good forgings are relatively easy to produce with the proper equipment, whereas good castings are relatively difficult to produce. This means that with forgings which have been subjected to ordinary inspection and pressure testing techniques the probability of an inferior product reaching the ultimate user is quite small.

However, ordinary inspection and pressure testing methods cannot be thoroughly relied upon when dealing with castings and unless 100 per cent x-ray examination and other expensive methods are adhered to the probability of inferior castings reaching service is relatively greater.

Alloy Saver — Another advantage of press-forgings over steel castings is that the desired properties can be obtained with minimum amounts of critical alloys. Take the example of a product re-



Intricate shaped valve body

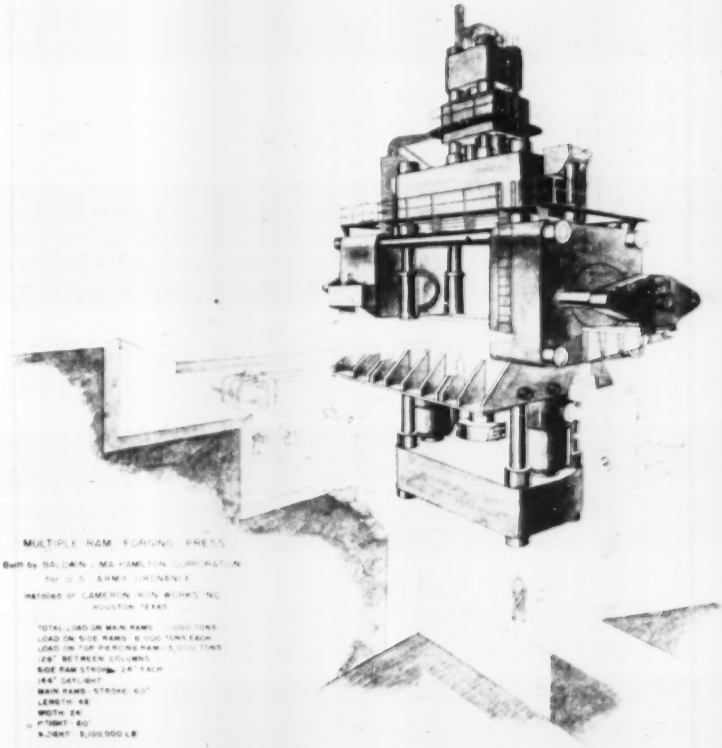


Ram-type tubing head body

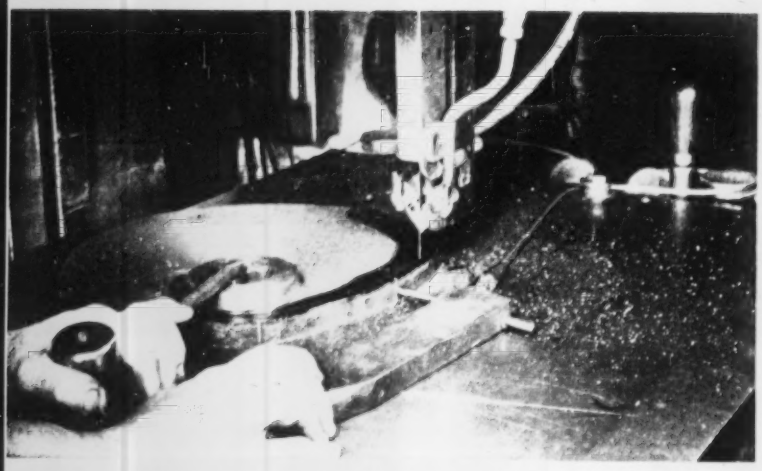
quiring high impact strength at low temperature, along with a high tensile strength. To meet these requirements these products in cast steel required 3½ to 4 per cent nickel. The use of only 1.75 per cent nickel in the press-forging stock produced results exceeding the minimum specifications by a more comfortable margin than castings containing a higher nickel content.

Application of Cameron forging techniques to ordnance and aircraft components produced such savings that an increase in the facilities to include a new and larger press is being made jointly by the company and the government. The new press will be rated at 11,000 tons capacity on the vertical ram and 6000 tons on each of the side rams. Baldwin-Lima-Hamilton Corp. will build the giant press that will greatly extend the possible work range.

Main vertical ram is to be equipped with an inner ram so that the billet may be pierced vertically as well as horizontally while the outer main ram holds the split die in position. Higher capacity of the new press will greatly expand the size of products which can be produced by this process.



Drawing of larger press that will be installed to more than double capacity for large ferrous forgings. Total load on main rams will be 11,000 tons



Bandsaw cam cutting at Frank L. Wells Co., Kenosha, Wis. As the operator guides it the workpiece is power-fed into the blade

Cam Curves

Using standard machines, some of them with special attachments, or special machines, you can whip the bugaboo of contoured cam surfaces. Here are some of the ways to do it

YOU DON'T need to farm out all your cam jobs. Many shops are making their own cams, even when their demand is not great enough to allow for special cam machinery.

Naturally as demand for larger quantities and or for more complicated forms increases you can more easily justify the installation of special purpose cam-generating machines.

The Hero—Strong man of the field is the contour-cutting bandsaw. It's the same machine that does 101 other jobs around the shop. It's the machine that's used probably more than any other in the production of cams.

The layout line is traced on the metal and the operator then guides the line past the saw blade. With some good magnifying device to help the operator hit the line, tolerances of 0.003 to 0.004-inch are not uncommon. This method will do wonders for you expecially when you're working in small lots.

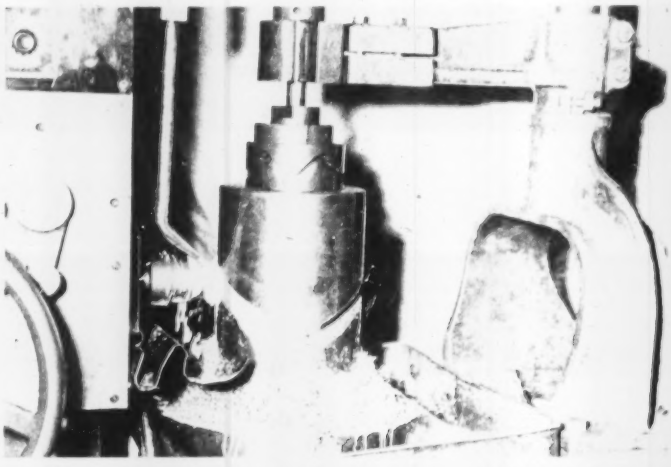
On the Mill — Many peripheral cams incorporate one or more lobes of uniform rise. These lobes may be readily generated on a standard horizontal milling machine if the machine is equipped with a milling attachment which can be set with its cutter-carrying spindle at any selected angle between vertical and horizontal.

The spiral index head in this case is used to hold and revolve the cam being milled. The cutter axis and the axis of the universal spiral index head are parallel. With this setup, the side of the milling cutter engages the periphery of the cam lobe and the milling machine table travels the cam at the same time it is being revolved, a uniform rise will be generated on the lobe.

Figures—With a constant speed of table travel, as the operating angle is changed the value of the lead or rise in the cam lobe will change. If the spindle settings are both vertical the lead or rise in the cam lobe will be the lead for which the machine table is geared. If the spindle settings were horizontal, there would be no lead or rise. Between these settings there is an infinite number of settings.

You don't need to operate on a trial and error basis to determine what angle to use to generate a particular rise. The distance the machine table travels while the index head is giving the cam exactly one turn is called the spiral lead. Multiply this figure by the fractional part of the circumference on which it is desired to generate the required rise. Then divide the actual desired rise by this product. The result is the sine of the angle to be employed.

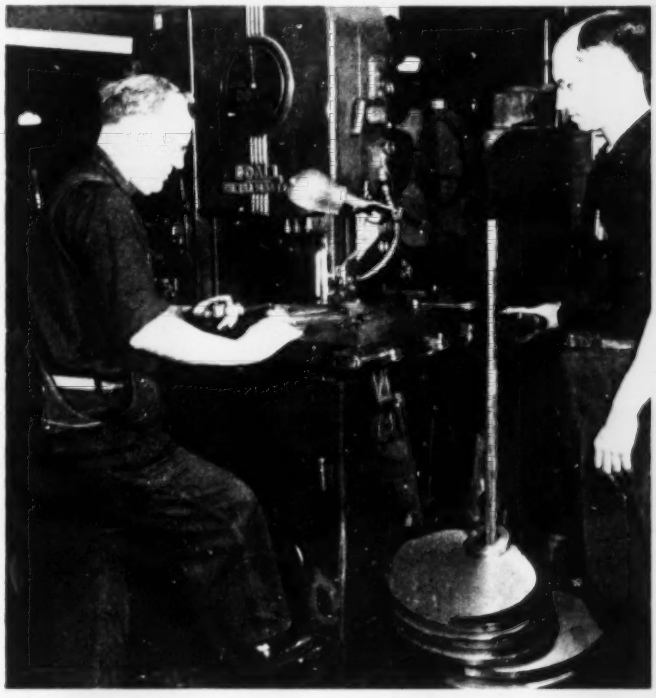
Tables — In many cases where cam milling is done the calculation is not necessary. Some milling machine manufacturers have developed and compiled cam-milling tables. These tables relate directly to their various standard change gears in reference to cam leads or rises, as each such rise would appear if it were produced over the complete 360-degree periphery of the cam.



Overhanging arm supports the workpiece and holds it true on this cam milling machine. Once set up, cycle is automatic

By JOHN E. HYLER

Aren't Tough



To cut cams on the bandsaw the operator simply follows the layout line which has been previously scribed on the workpiece

Reduced Error—When highly accurate gears are desired, one of the best ways to produce them is on a pantograph-type profiling machine. Reason for success here is the copy plate or pattern several times oversize. Any error in accuracy which exists in the pattern will be reduced in the final cam in proportion to difference in size between the cam and the pattern.

This method of producing small peripheral cams is recommended for use on experimental work where the high accuracy is essential.

Shapers — Gear shapers, having the advantage of a short stroke, are particularly useful for production of special cluster cams, mounted on integral sleeves. The cutter spindle on the standard gear shaper is mounted on a saddle. This saddle can be made to approach the work spindle, or to be withdrawn from it, progressively, during the cutting of the cam. In most cases both cutter spindle and work spindle are rotating as machining proceeds.

Production of peripheral cam contours at the gear shaper is essentially a generating process. Different methods can be and are used for producing peripheral cams at these machines. One method involves the use of a conjugate cutter.

Revolution—This cutter is designed and made with such a peripheral contour that when it is revolved in proper relationship to the cam being machined, it will automatically produce the required profile. During this time the axial lines of the work spindle and the cutter spindle remain a constant distance apart.

Thus where a conjugate cutter is used there is no movement of the gear shaper saddle that carries the cutter spindle while cutting is in process.

On Schedule—Where a conjugate cutter is used, it must either be arranged to rotate precisely once while the cam being machined makes one precise revolution, or the cutter must rotate a given number of times. A conjugate cutter rotating a given number of times while the work makes exactly one revolution is sometimes employed where the same rises and contours repeat on the periphery of a single cam. Valve-operating cams are an example of this.

Another good job for the gear shaper is the machining of cams which are an integral part of the camshaft. In this case the shaft is first machined on a lathe. Then the unfinished diameters of the peripheral cams are contoured on the shaper. Two or more members on the same shaft can be properly profiled using different cam profiles or the same contour can be produced at different locations radially.

Feed Cam—Also a special feed cam, mounted on the shaper, advances the cutter spindle progressively so an ordinary cutter will generate the required cam.

Generation of internal cams at the gear shaper is practical. Either conjugate cutters or a special feed cam may be used in the production of internal cams.

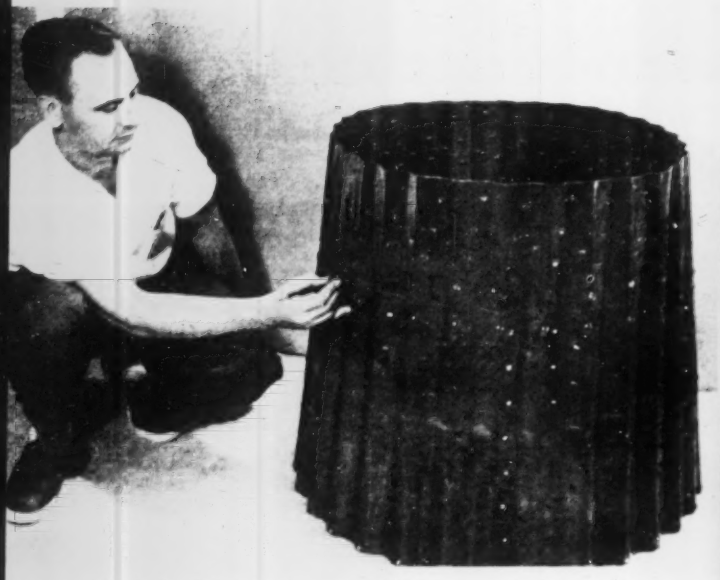
Where cams having a large throw are to be machined, a "false" center of rotation may be used. That is, the cam may be rotated about an axis which is close to the center of the cam area.

Cam Mill—The cam milling machine is essentially a carrier for two co-ordinated moving members. The first of these is the cutter spindle and the other is the work-holding head. These can be made to function in conjunction according to any pre-established pattern within the capacity of the machine.

To meet different work requirements, the workhead may be turned through an angle of 90 degrees. When peripheral or face cams are being milled it is set horizontal. It is turned to vertical whenever cylinder or other similar cams are to be milled.

PORCELAIN COATINGS:

Ingenuity Is



Typical of jet engine parts that are coated with porcelain enamel is the tail cone liner shown here. High resistance to heat and corrosive conditions is reported

Interior coating of this deep-well pump housing is one of the new heavy industrial uses of porcelain enamel

Review of design and fabrication data shows that some of the "impossible" coating applications of the past are becoming routine operations. Equipment size is growing

SHORTAGE of high alloy steels has focused attention on the use of porcelain enamel coatings on the more abundant base metals. This growing trend has been implemented by improvements in both the techniques and the coatings themselves, but certain important factors must be considered in order to gain the best possible results.

Of the hundreds of different coatings, there are, in general, only two groups of porcelain enamels and ceramic coatings: The regular, which are suitable for use only under normal atmospheric conditions and can thus be used with solutions that are normally free from strong acids and alkalis; and, the acid resistant, which are resistant to most acids except hydrofluoric.

Plenty of Color—Colors in these coatings are unlimited with the exception of gold or silver metallic finishes. While porcelain enamel is most often thought of as white, the wide range of colors now available is worth considering. This is particularly true in an industrial part that needs a special color for quick identification.

In designing for a porcelain enamel coating, it is often a relatively minor detail that precludes successful use of the material. An improper weld may be the sole cause that will prevent coating. If the major design is faulty, a good deal of money and time goes down the drain.

Investigate the Economics—There is a vast difference between a small, light gage decorative part and a heavy stainless steel high temperature industrial part. One might be made on a production basis; the other is a special piece that may never again be duplicated. When the problem involves the latter type, it is wise to consider that nursing may be necessary to bring about successful completion of the project.

Selection of the base metal often determines the cost of the finished piece. The best base metal is enam-

the Progress Factor

By W. A. BARROWS
President
Barrows Porcelain Enamel Co.
Cincinnati

eling iron. Along with it, cold rolled steel is also good. Stainless type steels with or without nickel content can also be coated.

Nix on Nonferrous—In certain cases, aluminum can be coated but, as a rule of thumb, nonferrous metals should not be used. Galvanized or zinc coated metals cannot be used since they preclude cleaning. The thickness of the piece may determine the base metal.

This brings out another cost as well as design factor. In the enameling process, the metal must first be cleaned for good adherence of the coating. Two methods are used sandblasting (sand preferred to grit) and a pickle bath. Sandblasting is more expensive but is the only method for cleaning cast iron or stainless steel and certain complicated cold rolled steel assemblies.

Ideal Design—Seeking an ideal design, some engineers have said that the best piece for coating is a half dome made of enameling iron that has a 4-foot diameter. This indicates several important points.

First, a dome can be sprayed more easily with the liquid enamel or slip. The enameling iron provides good adherence for the slip. Secondly, the curved metal offers better strength than a flat piece. A large radius bend will give a better base surface for the coating than a sharp bend.

Smoother Surface — For some unexplained reason, a coating sprayed on a curved surface presents a smoother appearance than that on a flat surface. An orange peel effect is often noticed on a flat surface which, while not important to the protective characteristics of porcelain enamel, makes the coating appear slightly textured.

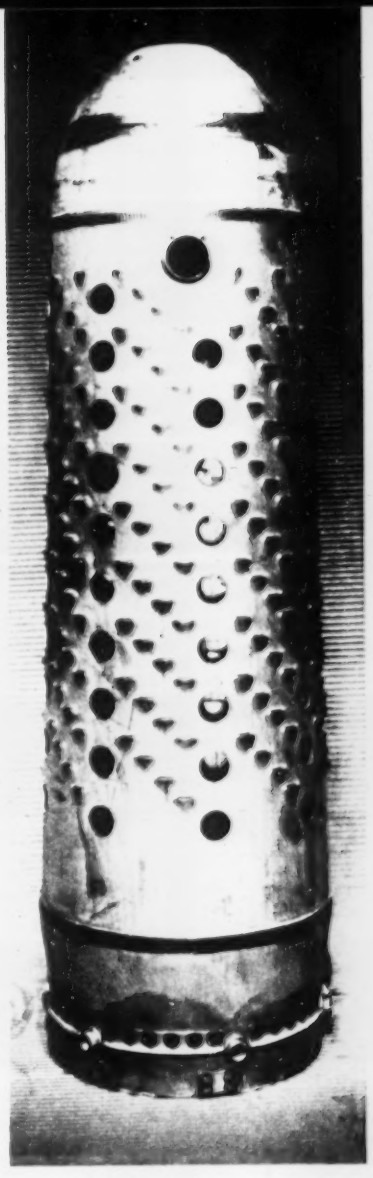
A single, self-contained piece offers the best surface for coating. If welds are necessary, the ideal is a smooth, gas-free type of the same base metal.

Plant Limits Size—The 4-foot diameter points up the fact that the size of a piece is necessarily limited by the equipment available in a porcelain plant. Our particular limits happen to be a 10-foot length, 4½-foot width, and a 6-foot height. These limits refer to the furnaces where the enamel is fired on the base metal. Some special furnaces have been designed to coat entire tank cars at one time.

Farm silos are coated with porcelain enamel in furnaces which permit firing in sections. We designed and built a special furnace to coat 21-foot lengths of pipe needed for a particular application. At the other extreme in size, small laboratory pieces have been coated. In one piece, the diameter was so small the liquid slip had to be applied with an eyedropper.

A Few Precautions — Coatings cannot be applied over brass, brass welds, or bronze due to lack of adherence. They cannot be applied over soldering, silver soldering, or parts that are expected to move like hinges or pins.

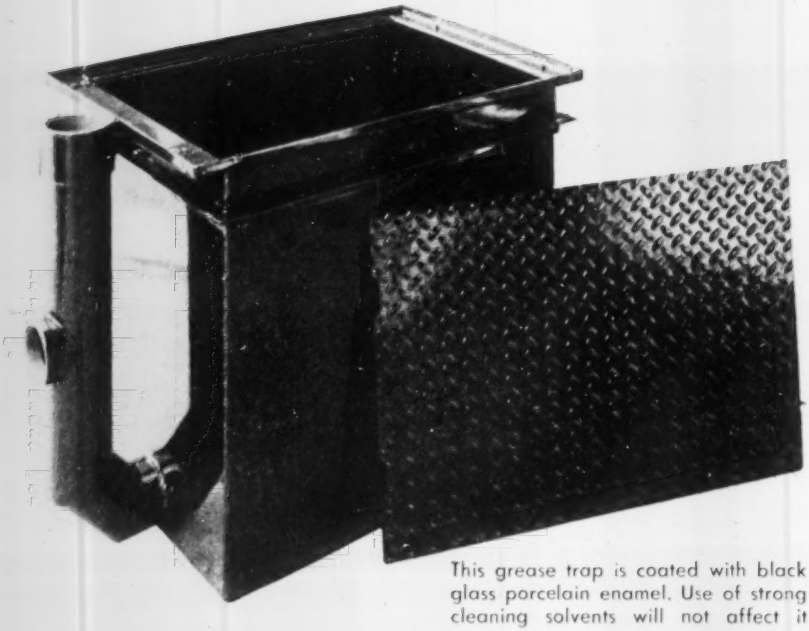
Riveted pieces can be coated only under limited ideal conditions. A light gage flat piece with a heavy welded stiffening angle cannot be satisfactorily coated because of unequal expansion and contraction that occurs in the fusing operation.



Coated combustion chambers of jet engines can take the extreme thermal variations from 1800 F to -60 F

Watch the Welds—Welds should be watched closely. Gas or electric welds are satisfactory. In lighter gage assemblies, spot welding is often used for attachment of clips or lugs. Such lugs or clips should preferably be of lighter gage than the base metal. Should two pieces be joined by spot welding, the spots should be very closely spaced, simulating a seam weld. Seam welding is very satisfactory in joining pieces to be enameled.

Where a piece includes threads, the threads are not coated, since porcelain enamel would destroy the thread action. The coating can be



This grease trap is coated with black glass porcelain enamel. Use of strong cleaning solvents will not affect it

applied to the remainder of the piece with accurate control.

Varying Thicknesses OK—These limitations do not mean that joined pieces of varying thicknesses cannot be coated. In one instance, a conveyor screw varying in thickness from 2 inches on the cylindrical base to $\frac{1}{8}$-inch on the fins was successfully coated. The welds were smooth so the coating could be applied uniformly. In such a case, three or four preheatings may be necessary before the final firing.

Heat to about 1500 F must thoroughly penetrate each section to insure adherence of the coating. The additional pre-heatings equalize the heat in all sections. Extreme variations in thickness should not be used because of this time-temperature factor.

Coating Tolerances—These can be held to strict limitations. If necessary, tolerances of a few thousandths of an inch can be held. Ordinary coatings run from 0.005 to 0.030-inch. High temperature coatings on stainless steel are generally applied at thicknesses of 0.001 to 0.0015-inch.

The question of mechanical shock on the coating often arises. The mechanical impact which various porcelain enamel and ceramic coatings can withstand is extremely high and it can be stated as a rule of thumb that the coatings will adhere up to the yield point of the metal.

Good for Thermal Shock—Where thermal shock will affect the piece, porcelain enamel can be extremely useful. This particular field has been sparked by the nation's jet engine program and steady improvements are being made. It has been proved that coated pieces can be used where thermal shock is as great as 1800 F to 60 F in a matter of seconds.

Reviewing the overall field, it is difficult to say where limitations are imposed on parts that can be coated. Base metals can be changed and more desirable methods of joining employed. The ingenuity of the porcelain enamel applicator can often overcome a situation thought to be impossible. In essence, the size of the enameling equipment is the only true limiting factor in the rapidly increasing applications of these coatings.

Socket Screw Calculating Eased

To help engineers, specifiers and others to quickly select correct sizes of socket screws, Standard Pressed Steel Co., Jenkintown, Pa., has brought out a new, easy-vision screw calculator.

With it, all dimensions can be obtained quickly for a standard screw of given diameter. Threads per inch and the proper tap drill size in the National Coarse and the National Fine series, and the body drill and counter-bore sizes are given for each diameter. Calculators are available free to encourage manufacturers to use standard rather than special fasteners, according to company officials.

Automation Boosts Output

It does not replace the worker, ASME is told, just multiplies his unit productivity

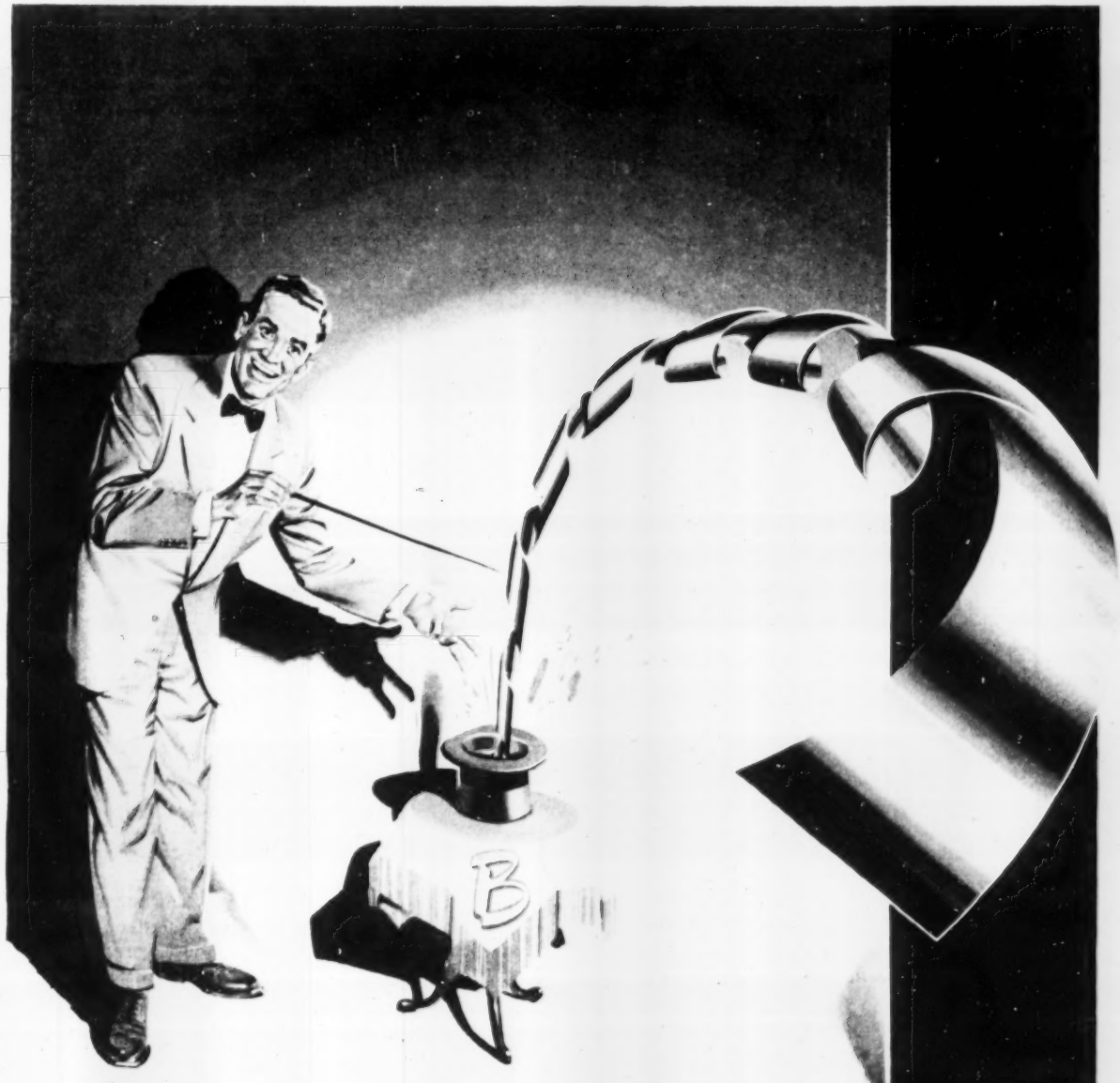
AUTOMATIC control of factory operations does not replace workers, but rather multiplies each worker's output, George M. Muschamp, vice-president of engineering for Industrial Division, Minneapolis-Honeywell Regulator Co., told the annual meeting of American Society of Mechanical Engineers in New York.

Citing the example of a modern high-speed rolling mill turning out strip steel at 5000 fpm, he calculated that it would take 50,000 blacksmiths to attain a like production with hammers.

More System Planning—Turning to the positive aspects of automation, Mr. Muschamp told his audience that they must increasingly engineer whole systems of operating factory processes before a machine is even put in place, instead of simply attaching controls to machines hitherto operated by manual direction.

"In some industries the era is passing in which the process is designed independently of control means, and the controls added later as something of an afterthought. More advanced thinking embodies the idea of collectively working out the overall process problems including the control considerations, taking advantage of the latest techniques and equipment in all branches," he said.

Costs Critical — Mr. Muschamp cited, as stumbling blocks, management and manufacturer inertia, cost differences which might rule out the mechanically most efficient process as extravagant, and reluctance of management to spend on engineering alone. Lumping the engineering fee for automation service into the equipment manufacturers' price, he said, had gone about as far as it could.



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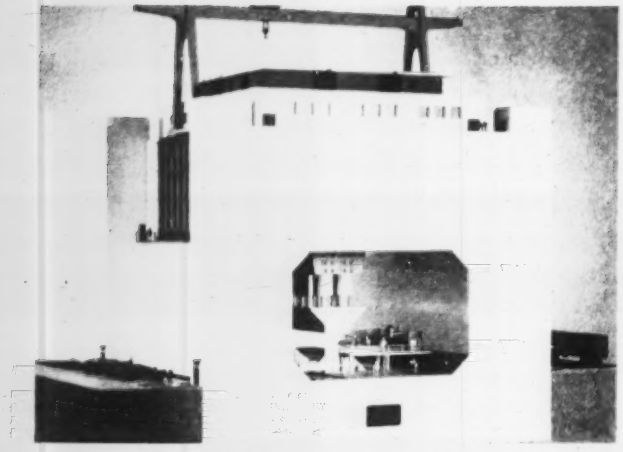
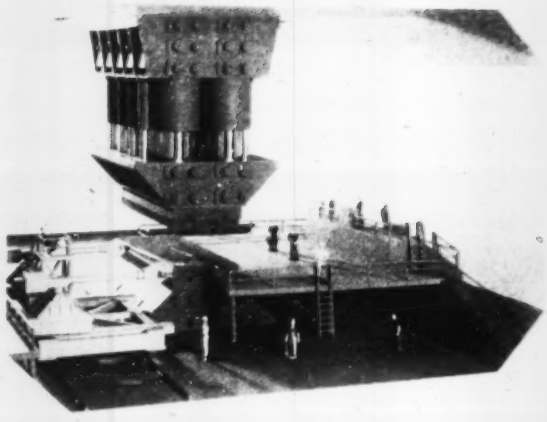


Gantry crane on top of building has 100-ton capacity and handles power plant equipment and 90-ton accumulator bottles located on side to minimize run of piping



Closeup of working area for 75,000-ton model shows 360-degree access for placing and removing dies and work of any size. Manipulator holds large workpiece

Throatless Design Raises Press Ceilings

DEPARTING from the conventional design of large forging presses, a new throatless construction permitting 360 degree access to the dies raises the ceilings of possible press sizes. In the current heavy press program sponsored by the Air Force two 50,000 ton presses are being built and engineering work is being done on a 75,000 ton unit. The latter size isn't considered practical at the present time and is regarded as the biggest possible by some of the program planners.

Engineering work completed to date by Austin Co., Cleveland, and Hydraulic Press Mfg. Co., Mt. Gilead, O., indicates their design is practical for press capacities ranging from 20,000 to 100,000 tons or more. The two principals jointly formed Throatless Press Co. having complete responsibility for all future negotiations, development, designs, manufacturing and construction.

Started Here—Idea for the press design originated with C. A. Van Dusen, Van Dusen Engineering Co. and a former aircraft industry executive. HPM and Austin, to whom Mr. Van Dusen assigned his rights, converted the idea into an engineering project that now offers a practical solution to the many design problems for heavy presses.

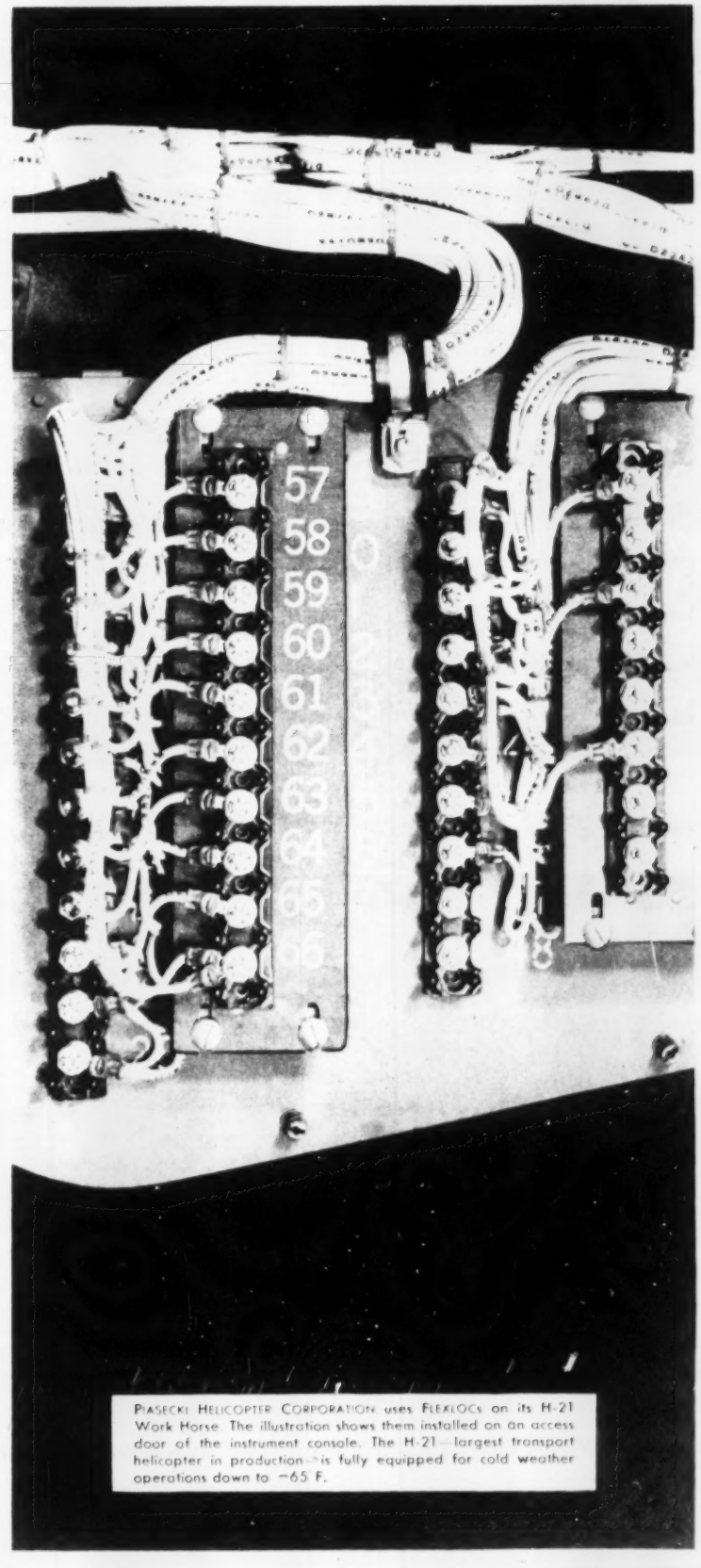
Basic idea for the press structure is a rather simple one. The mass of concrete above the press must be equal to or greater than the force exerted by the press. Austin's wide experience with prestressed concrete construction ties in neatly with HPM's experience as a builder of large hydraulic presses in the structure's design. As shown in the illustrations, no vertical press columns are needed except the concrete walls 80 feet apart.

Size Is Flexible—While actual dimensions of the concrete mass placed around the 75,000 ton forging press are not announced pending final studies, the model indicates a structure with an over-all height of 180 feet with 30 feet below the ground level press room. Depth of the excavation is not a constant but would depend on bearing ability of the site. With a rock foundation, for instance, the amount of excavation could be reduced to a bare minimum. Length of the initial press room is scaled at 120 feet but unitized design would readily permit lengthening of the room itself, extending bed dimensions, adding press sections to increase tonnage or pressing area capacity, or installing a line of smaller presses in a single frame.

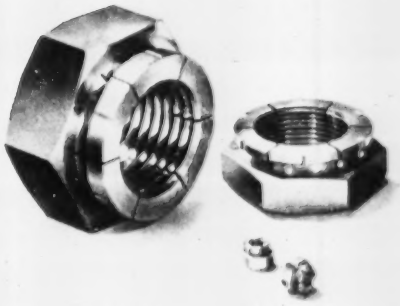
Construction of both the building and size of actual press components do not impose limitations on the press location. Availability of concrete and the readiness with which it can be transported to any location solve part of the problem. The press components are generally not much larger than those being regularly made for numerous smaller presses. Special transportation problems requiring either circuitous routing or custom-built equipment are not expected to be a factor.

Easy Entry—Ready access to the dies simplifies design of manipulators and die carriage since they can operate from any side. Pressing area can be of any desired size or shape within the limits of the concrete frame to accommodate work of unusual dimensions. Large dies can be used for jobs like forming sheets. The design also allows unlimited room for perimeter reinforcement of high unit pressure rubber pad holders and simplifies using inert gas chambers for enclosing dies when forging metals and alloys requiring such treatment.

Cost comparisons are difficult since there isn't any figure available as to the cost of a 75,000 ton forging press of conventional design but Austin and HPM estimate a throatless version of the same capacity would cost about half as much. Another advantage pointed out by the two companies is that the entire press can be made on equipment presently available in metalworking plants.



PIASECKI HELICOPTER CORPORATION uses FLEXLOCs on its H-21 Work Horse. The illustration shows them installed on an access door of the instrument console. The H-21—largest transport helicopter in production—is fully equipped for cold weather operations down to −65 F.



Why use FLEXLOC locknuts?

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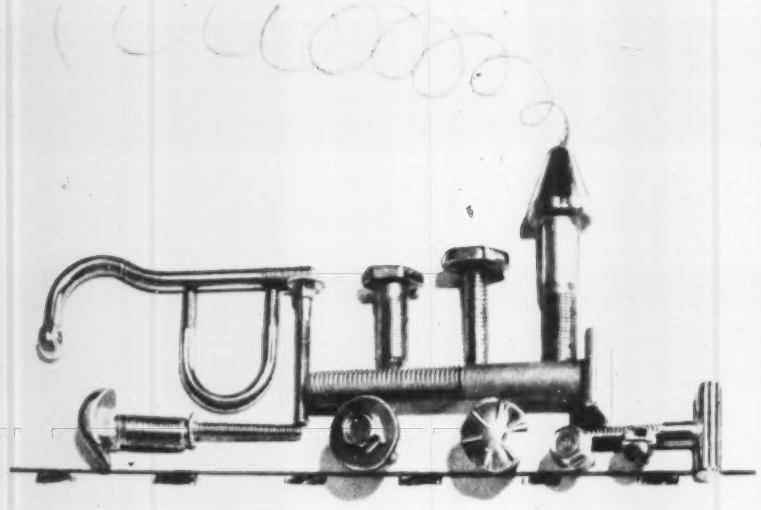

● Take a tip from leading concerns which have found the answer to their fastener problems in specially designed Circle Ⓑ bolts. They are producing better designed, stronger products, with more sales appeal, faster . . . and getting them often at considerable savings in time and money.

● We are equipped to help you realize these and other advantages. You can get on the right track by writing for complete details pertaining to your individual requirements.

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Machine Bonds Lead-Steel

Hand techniques outmoded by a compact machine which is said to produce perfect bond

VERSATILE automatic machine which will produce a perfect chemical bond between lead and steel is announced by Knapp Mills Inc., New York. In one day one small machine will clad a steel surface that would require 8 to 10 man-days to cover by hand techniques, according to Mr. Alfred P. Knapp, company president.

With this new method, steel is first prepared through leadizing. Then lead of any desired thickness can be applied. The lead will not separate from steel in service unless it is melted off at temperatures close to 621 F, the melting temperature of lead itself.

Pooled Ideas—About a year ago American Viscose Corp. selected Knapp Mills to develop all its patents and patent applications pertaining to lead. The new machine has resulted from pooling the ideas and talents of the latter's staff with members of the American Viscose Corp.'s patent development department.

Such machines will chemically bond a strip of lead up to 12 inches wide by $\frac{1}{4}$-inch thick to prepared steel. The operator can control width and thickness of the lead cladding by regulating speed of the machine and spreading or narrowing its two cladding heads.

No Lead Carried—An important advance in design over earlier models makes it unnecessary for the machine to carry its own lead supply. A strip of lead is laid down under the machine; the cladding heads melt this lead and chemically bond it to the steel as the machine automatically moves across the plate.

The machine is designed so it may also carry its own lead supply in tubular feeds at the front of the unit. While the machine may run free, directly on the steel, it will also operate on a track. By taking off the bottom carriage, reversing it and mounting it on top of the machine, the unit will run on a lightweight aluminum or magnesium beam so it operates in a tank shell as well.

The whole carriage can be turned

Pneumatic Sample System

A two-way pneumatic tube system that connects an electric furnace plant office with the laboratory helps maintain quality steel by transmitting samples quickly. Standard Conveyor Co.'s 4-inch diameter system handles hollow steel cones and slugs that do not exceed 4 pounds. Reports can be returned with equal lack of time lag

to clad lead on either the right or left side. The unit weighs less than 15 pounds. Even though cladding heads direct intense heat on the lead and steel beneath them, the machine itself does not even become warm in operation.

Hand Tool Too—A hand-operated model has also been designed. This tool may be used to burn lead to lead, as in welding sheet lead and pipe. The hand unit, weighing less than 10 pounds, operates without a carriage on a single wheel or tripod arrangement with a grip for the operator's use.

Casters Study Future Research

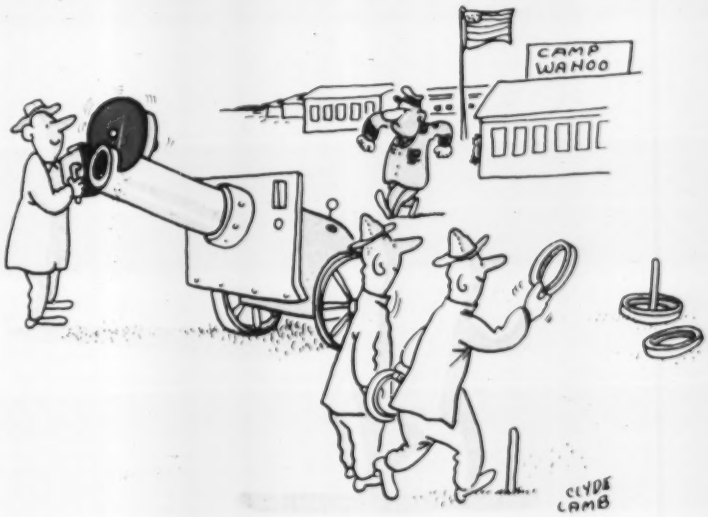
Course of future technical research to be sponsored by the Alloy Casting Institute will be decided at the next meeting of the ACI technical research committee, scheduled for January 14, in Columbus, O.

Discussions at the meeting will determine what percentage of the future programs should be concerned with fundamental metallurgical research, and what percentage should be devoted to developments, testing or other topics.

the *tougher* the cutting job . . .

the *better* the opportunity for . . .

Abrasive Cutting



We question the judgment of G. I. Joe, but even the General knows that Allison Wheels cut rings around competition. Fact is, whatever the material or the conditions, there's an Allison Abrasive Wheel that does a more economical and efficient cutting job. Steel, non-ferrous metals, bar stock, tubing . . . whatever it is, Allison Wheels cut cleanly at high speeds.

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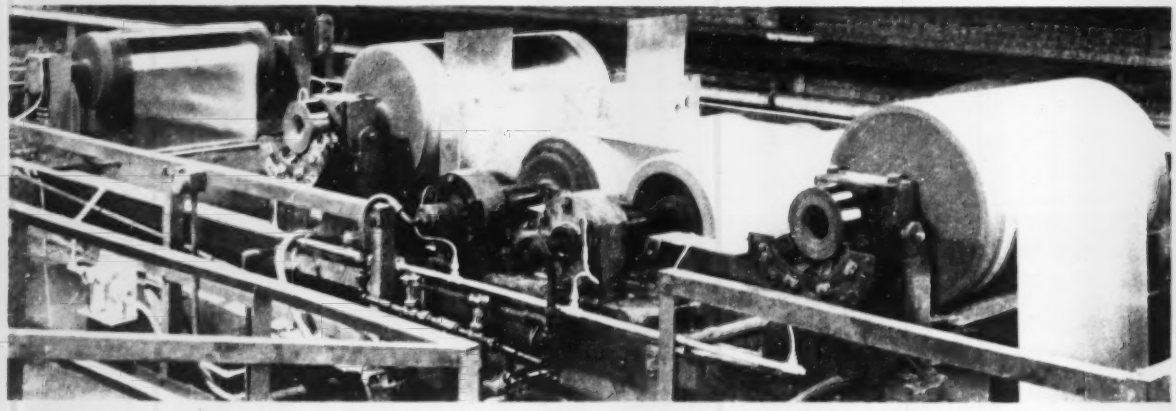


View of top portion of chemical treating section on tinning line at Wheeling Steel. Oil mist unit at left is serving seven separate bearing locations

Oil Mist Tames Tinning Problems

Solution contamination problems in this plant were minimized with oil mist lubrication system. Now they have fewer "menders"—less maintenance

GREASE GUNS retired. That's the story out of the Yorkville, O., plant of Wheeling Steel Corp. where Alemite Oil Mist lubrication is used on conductor rolls of two electrolytic tinning lines. Oil Mist is the trade name for a system which automatically distributes a stream of atomized oil particles directly to the bearings.

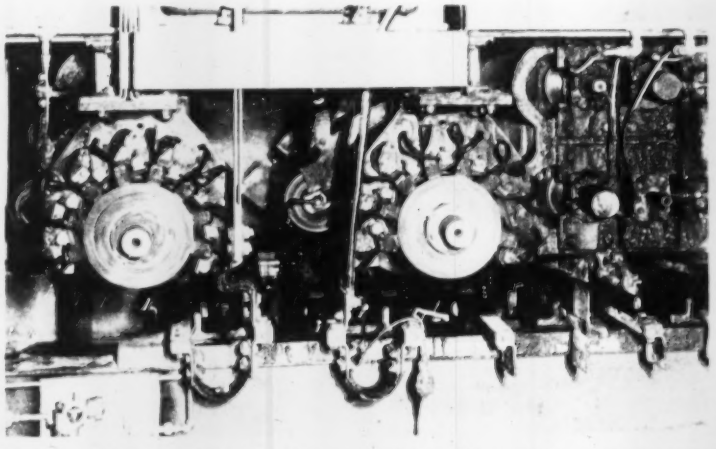
Before application of 10 oil mist units to the lines, one with a tinning rate of 680 and the other 1000 fpm, lubrication was applied with hand-guns. Approximately 75 lubrication points had to be greased every 24 hour period. Many of these points could not be reached without stopping the machines, which are scheduled for continuous operation.

Grease Troubles — Accidental overlubrication was the cause of a lot of grief, especially in hot weather. Dripping grease would contaminate the tinaing solution.

Another troublespot was overgreased idler rolls. Internal friction in bearings too fully packed with grease sometimes slowed them down to the point where the strip was traveling faster than the idler over which it was passing.

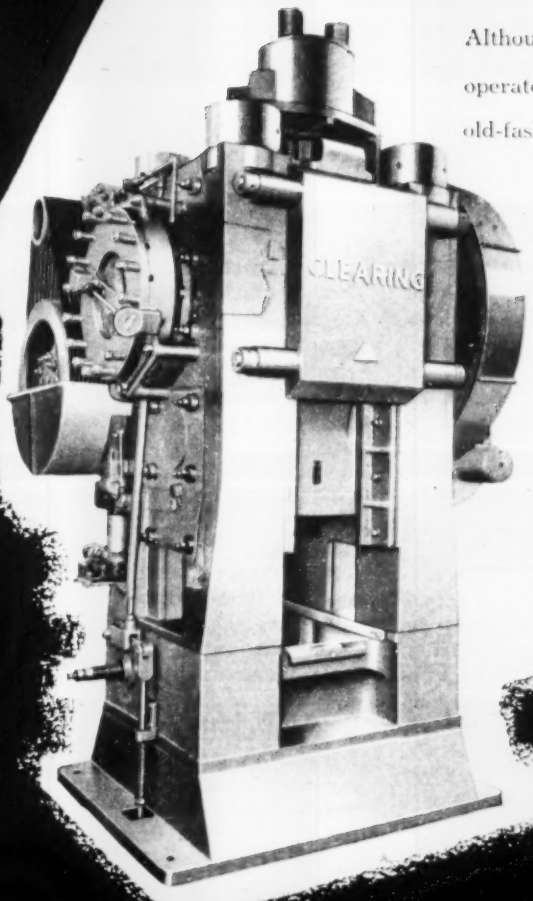
Had Enough — In April, 1951, Wheeling engineers decided they had enough of these greasing problems. Installation of the oil mist system began.

The line selected was the 1000 fpm line. The air line to the machine is a 1 inch ID pipe, putting 80 pounds pressure into a Wilkerson moisture trap and air filter. The air next goes to the units themselves where it passes through a regulator and gage, then through a venturi where it draws oil from the reservoir. The mixture of air and oil, which can be set to desired richness, is thrust against a baffle and then only the most minute particles are blown into the $\frac{1}{2}$-inch



Grease dripping into this tinning tank used to cause contamination troubles. Oil mist has cut this cause of work stoppage completely

FOR BETTER FORGINGS THAT COST LESS



Although they demand less skill and less manual effort from the operator, Clearing forging presses turn out more pieces per hour than old-fashioned methods. The forgings are uniform in size and weight regardless of the human element.

If you're looking for ways to reduce forging costs or increase production without increasing man-hours, Clearing forging presses are your answer. We'll be glad to supply details without obligation to you.

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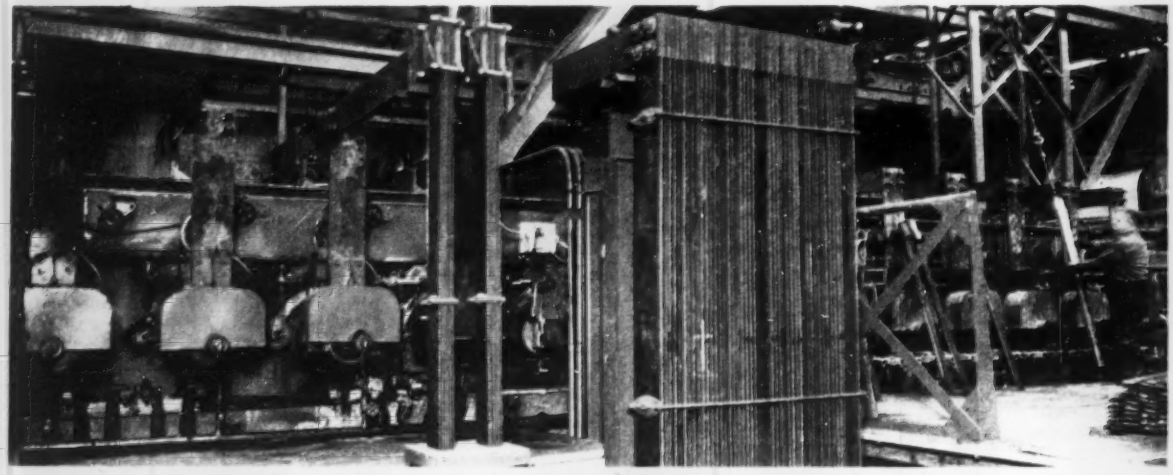

Once a trouble spot on the line, there have been no bearing failures in this acid and moisture-laden atmosphere. Surface scratches are almost nil

main delivery line from which it goes into $\frac{1}{4}$-inch tubes feeding the various bearings. A Davis solenoid activates the system when the machine is turned on.

Easy On Oil—Lubrication is continuous; whenever the line is running, air is going to the 10 units which each serve an average of six 5-inch bearings. Air pressure to each unit is 10 pounds, and average oil consumption is approximately $\frac{1}{8}$-ounce per hour for the half-dozen bearings served by each unit. Thus oil consumption for both tinning lines is only 30 ounces per 24 hours.

Approximately nine months after the first line was equipped, the 680 fpm line was also set up with oil mist lubrication. In the nine month period there was not a single bearing failure, and there was no single instance of solution contamination.

Licks Acid Trouble—One unit of the tinning process had previously given much trouble before the changeover. This was the chemical treating tower through which the strip passes after leaving the solution. The acid solution used in treating the tinned sheet would attack the EP greases that were applied with a handgun. Using a 750-second lead-naphthalate type EP gear oil, the oil mist system has cut bearing failures in both the bottom and top portions of the tower. This, despite acid and moisture conditions in the bottom, and superheated steam at the top.

Tried In Sweden—One of the earliest experiences with oil mist in the steel industry dates back to 1942 in the SKF steel works at Hofors, Sweden. Here it was applied to antifriction bearings in a cold rolling mill. D.T.E. extra heavy oil is used and oil consumption is reported at 0.04 cubic centimeter per bearing per hour a low figure in comparison to the usual amount of lubricant required for roll mill bearings.

Other applications have been successfully made on hot saw bearings, Wheelabrator bearings, spindle bearings on buffing and polishing machines, shake-out bearings, precision rolling mill bearings, etc, and in all cases the oil mist lubrication method has prolonged bearing life, improved production and cut lubrication costs.

How It Works—Underlying principle behind the oil mist system, as pointed out by Alemite engineers, is the delivery of a continuous and uniform amount of oil to all lubrication points connected in the system, neither starving nor flooding any one bearing. For this reason, three separate types of fitting orifices have been designed. Straight mist is used with antifriction bearings, because they have sufficient velocity and mass in motion to, in effect, knock out minute oil particles from the mist stream.

However, plain bearings normally do not have the necessary velocity or mass in motion in direct contact with the mist to knock particles out of the air. For that reason a condensing fitting is used which converts the mist to fluid oil. These fittings come in several orifice sizes for different sized bearings.

Sprays Too—The third type of bearing connector is the spray fitting, which by virtue of its design partially condenses the mist into a fine spray. This type of lubrication is highly desirable for exposed gears, chains or any other surface requiring a fast oil wetting.

In all three types, field experience has showed that the air flow, aside from being a perfect medium for oil distribution, also performs a cooling function within the bearing.

Quaker Finishes Belt Expansion

Installation of two large conveyor belt presses, one 72-inch and one 60-inch, marks completion of the $250,000 belt department expansion at Quaker Rubber Corp., division of H. K. Porter Co. Inc., Philadelphia.

With addition of these two presses, capable of producing conveyor belts as wide as 72 inches, Quaker reports that they can now meet almost any requirement of industry. Conveyor belts from the new presses are especially adaptable to the handling of hard ores, coal, rock and other bulk materials where maximum width belts haul the products over comparatively long distances.

The 72-inch belt press measures 30 feet by 92 inches and can exert a force up to 3300 tons, while the 60-inch press is 30 feet by 80 inches with a force of 3000 tons.

Storage Idea Saves Space

WHERE storage area is at a premium, careful planning can simplify or eliminate warehousing dilemmas. Such was the case at Cooper-Bessemer Corp., Mt. Vernon, O., builder of large diesel engines and gas engine driven compressors. At this plant, 1500 sq ft of warehouse space that would have been needed to store finished crankshafts has been cut to 300 sq ft, saving 80 per cent of the floor area for other essential use.

With Cooper-Bessemer's storage plan, crankshafts are simply stocked in a vertical position adjacent to a line of columns and away from the more active center section of the main warehouse bay.

Bolted To Floor — Crankshafts are secured by bolting to a flange plate in the floor and tying to a platform with clamps as a safety precaution. A lifting clamp is used on the crane hook facilitating lifting and handling. This method of storing the crankshafts eliminates any possibility of the distortion of these precision machined shafts.

Cost reductions with the new storage procedure acrue from time and labor saved in handling the finished parts. Formerly it was necessary to coat the precision ground shafts with heavy grease and store them outdoors. Because of the floor savings, the new storage system enables these units to be brought inside without taking up a major share of the warehouse's limited facilities. The crankshafts need only be coated with light oil that can be wiped off prior to assembly into the engine crankcase.

Enlightened Selection

In a statement to STEEL, W. C. Lockwood, supervising engineer, Cutting & Grinding Fluids, Texas Co., New York said that recent industry demands for increased production have thrown the spotlight on proper selection of cutting and grinding fluids.

According to Mr. Lockwood the selection of these fluids should be undertaken with the same care given to selection of machines and tools.

Water solutions, emulsions, straight mineral oils or highly compounded oils all have properties that will give best results on a particular operation. Intelligent choice of one of these fluids can be the extra shot needed to make the job succeed.

Fork Truck Charging

Dumping scrap and virgin metals into foundry charging bucket pits is a job handled easily by this versatile fork truck. Electro-Alloys Division, American Brake Shoe Co., Elyria, O., uses the 4000-pound Baker truck part time for dumping material, keeps it busy on receiving and shipping when it isn't working at the charging pits

New Trailer Brake Designed

A special hydraulic foot controller for passenger autos used to pull coach trailers has been developed by the Warner Electric Brake & Clutch Co. Beloit, Wis. The automobile-size control uses the same principle as the heavy-duty type that are designed for use in large tractor-trailer combinations.

The controller was developed as a safety feature for the many coach trailer owners who experienced difficulty in co-ordinating the application of both car and trailer brakes, since the auto brakes were applied in the conventional manner and the trailer brakes were applied by use of a hand control.

This special hydraulic foot controller, it was explained, is mounted directly into the car's braking system so that a normal brake action results in a simultaneous application of both the car and the trailer brakes.

METALWASH

A score of custom-built METALWASH machines treat a myriad of ball bearings of different types and sizes every day at the Fafnir Bearing Company plant, New Britain, Conn.

AT FAFNIR

Because the manufacture of precision ball bearings to exacting specifications demands repeated washings, the Fafnir Bearing Company insists on METALWASH.

The rigid control exercised in ball bearing production is dramatized by METALWASH MACHINERY CORPORATION in the January issue of the *Finishing Engineer*.

Read THE FAFNIR STORY for an exciting close-up of precision ball bearing manufacture.

METALWASH *Finishing Engineer*, published quarterly, is available on request to engineers and executives to whom cleaning and finishing are operations of interest.

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WANT CORROSION RESISTANCE? Iridite will give you better-than-specification protection against corrosion.

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Compounds Extend Tap Life

SERIES of tapping compounds reported to eliminate problems of tap breakage, low production, use of white lead, poor finish and short tap life is announced by Van Straaten Chemical Co., Chicago.

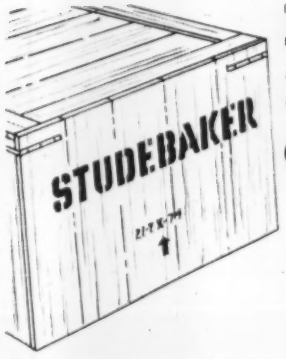
The series is effective because it has unique polarity characteristics that resist wiping action giving better carry-through. In addition, better wetting ability provides complete penetration to all areas of cutting contact.

Problem was first presented to Van Straaten by a New York manufacturer that was gang tapping armor plate steel. From 14 to 18 holes were being tapped at one time with a multiple tapping machine on armor plate castings with a Brinell hardness of 241 to 293. The taps varied from $\frac{1}{2}$ to 1 inch and ran at speeds from 128 to 57 rpm.

Start With Research—Based on performance of oils that failed, a new series of oil compounds was developed. The first was effective, but with a viscosity of 1600 seconds at 100 F, it was too heavy for the coolant pump. The second compound, known as Vantrol 5510-B, was used because of its viscosity of 100 seconds. It has the same chemical makeup but lower viscosity. The job now runs smoothly. Often tap breakage is as low as one or two a week.

On another job, a Wisconsin plant had tried for 10 years to replace white lead in an operation that used taps up to $2\frac{1}{2}$ inches. Only with white lead could they get an acceptable finish and tap life but the white lead was extremely difficult to remove from the parts. Parts were axle housings, steering forks and carriers of SAE 1040 and 6145 steel, Brinell hardness of 179 to 207.

More Tap Life—With the 5510-A, heat was reduced and tap life extended. On the larger taps, life has been raised at least 100 per cent, reports the firm. On the $\frac{3}{4}$-inch tap where the company formerly got six pieces per grind, they now get 75. Finish is excellent. The compound cleans in one minute in an agitated tank washer, the research engineering report declares.



RUBBER-TIRE LORAIN loads 24 crated cars and trucks daily for export shipment

Put these cost-cutting Lorain Self-Propelled Crane features to work in YOUR plant . . .

- One-man operation—work any hour, any season, with equal efficiency.
- More than 16 lifting attachments available for any size, shape or type material.
- Unlimited rubber-tire mobility — move anywhere, any place around your yard — move materials when and where you need them.
- Fewer aisles — more storage space — stack materials higher — reach farther with the long crane boom.
- Fingertip air steering — air brakes — all controls in operator's cab — 4 speeds in both directions, 1 to 7 m.p.h.

Handling big, bulky boxes for export shipment is no problem at the South Bend, Indiana, Studebaker Plant. Using a mobile Lorain Self-Propelled Crane, Model SP-254, Studebaker keeps a steady flow of crated assemblies, weighing an average of 3-1 2 tons, heading for export destinations every day. 12 crated cars and 12 crated trucks daily are loaded by this fast stepping, versatile Lorain crane. Notice how the Lorain has been fitted with a special 30 ft. gooseneck boom to give clearance to the extra-long boxes, measuring as much as 26-1 2 ft. in length and weighing up to 10,000 lbs. Also, note the special clamp that firmly grips the box for loading. These are but a few of the many ways Lorain cranes can be adapted to *your* material handling.

This is the third time Studebaker has chosen rubber-tire Lorains for their plant. Here's proof of satisfaction . . . not only with Lorain performance, but in the advantages of Lorain rubber-tire mobility on material handling jobs.

To get things on the move, faster, more economically . . . to handle your materials like the biggest, most progressive companies do, investigate the complete line of Lorain cranes. Your local Thew-Lorain distributor can give you the facts.

THE THEW SHOVEL CO.
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Lorain specializes in mobile crane power for material handling . . . offers crawler and rubber-tire mountings up to 45 ton lifting capacity. There is a size to fit your material handling needs . . . and a right attachment for any kind of material.

THEW LORAIN®

Furnace Treats 110-ft Pieces

Unusual furnace now being built for an aluminum plant by Westinghouse Electric Corp., Pittsburgh, will stand vertically as high as a 13-story office building. This vertical furnace will be used to heat-treat long, extruded aluminum shapes required primarily by airframe builders.

Aluminum pieces 110 feet long will be suspended in the heat-treating tower, which stands about 130 feet high. At the conclusion of the heat bath, the suspended pieces will be dropped quickly into a water-filled pit of the same depth for quenching.

Built Before—Vertical furnaces of this type were built during World War II and a number of improved models have been constructed since. None, however, can accommodate extrusions longer than 60 feet. In these furnaces, temperature must be held within close limits, i.e., 925 ± 10 F. Also, the temperature difference between the top and bottom of the tower must be slight.

The furnace is designed to provide a maximum temperature difference of less than 5 degrees. This is accomplished by maintaining a high rate of gas circulation. In previous aluminum heat-treating towers, the heaters and the parts to be heated were contained in a single column. In this taller furnace, combustion takes place in one tower and heated air passes into the top of the heat-treating tower that stands beside it.

Koppers Pegs '53 Goal

Production from new and expanded installations and introduction of new and improved products will considerably enlarge the services of Koppers Co. Inc. to industry and, indirectly, to the nation, General Brehon Somervell, Koppers chairman and president said in a year-end statement.

"Full production of ethylbenzene, an intermediate chemical in the production of synchetic rubber and plastics, will be reached early in 1953 at the new Williams plant of the company's Chemical Division near Port Arthur, Tex. From Port Arthur the ethylbenzene will be shipped to the Kobuta, Pa., plant of the Chemical Division.

CALENDAR
OF MEETINGS

January 11-13, Institute of Scrap Iron & Steel Inc.: Annual meeting. Hotel Commodore, New York. Institute address: 1729 H St. NW, Washington 6. Executive vice president: Edwin C. Barringer.

January 12-13, Industrial Furnace Manufacturers Association: Winter meeting. Hotel Cleveland, Cleveland. Association address: 420 Lexington Ave., New York.

January 12-15, American Management Association: Midwinter general management conference. Hotel Statler, Los Angeles. Association address: 330 W. 42nd St., New York 36. Information: Donald G. Keer.

January 12-16, Society of Automotive Engineers: Annual meeting & engineering display. Sheraton-Cadillac hotel, Detroit. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

January 13, Mining & Metallurgical Society of America: Annual meeting. Mining Club, New York. Society address: 11 Broadway, New York. Secretary: Lt. Col. Donald M. Liddell.

January 15-17, National Tool & Die Manufacturers Association: Winter quarterly meeting. Sorrento hotel, Miami Beach, Fla. Association address: 907 Public Square Bldg., Cleveland. Executive Secretary, George S. Eaton.

January 19-23, American Institute of Electrical Engineers: Winter general meeting. Hotel Statler, New York. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

January 20, Cutting Tool Manufacturers Association: Annual meeting. Hotel Statler, Detroit. Association address: 916 Penobscot Bldg., Detroit. Secretary: Emil Gairing.

January 20-22, American Medical Association: Congress on Industrial Health. Drake hotel, Chicago. Association address: 535 N. Dearborn, Chicago 10. Secretary: Dr. C. M. Peterson.

January 20-22, Caster & Floor Truck Manufacturers Association: Winter meeting. Hotel Roosevelt, New York. Association address: 27 E. Monroe, Chicago. Secretary: H. P. Bolan.

January 21-22, Steel Shipping Container Institute: Winter meeting. Pierre & Hampshire House, New York. Institute address: 600 Fifth Ave., New York 20. Secretary: L. B. Miller.

January 22, American Coke & Coal Chemicals Institute: Regional meeting. Edgewater Beach hotel, Chicago. Institute address: 711 14th St. NW, Washington 5. Executive secretary: Samuel Weiss.

January 22-23, Steel Plate Fabricators Association: Annual meeting. Palmer House, Chicago. Association address: 37 W. Van Buren St., Chicago. Secretary: Dwight Evans.

January 23, Malleable Founders' Society: General meeting. Hotel Cleveland. Society address: Union Commerce Bldg., Cleveland 14. Managing director: Lowell D. Ryan.

January 26-28, Truck-Trailer Manufacturers Association Inc.: Annual winter meeting. Edgewater Gulf hotel, Edgewater Park, Miss. Association address: 1024 National Press Bldg., Washington. Managing director: John B. Hulse.

January 26-30, American Society of Heating & Ventilating Engineers: International heating & ventilating exposition. Grand Central Palace, New York. Society address: 51 Madison Ave., New York 10. Secretary: A. V. Hutchinson.

February 1-5, Associated Equipment Distributors: Annual meeting. Hotel Conrad Hilton, Chicago. Association address: 30 E. Cedar St., Chicago. Secretary: P. D. Hermann.

February 2, Cleveland Engineering Society: Annual machine design conferences. Society offices, 2136 E. 19th St., Cleveland 15. Information: Don Cornish.

February 4-6, Computor Conference Committee, Institute of Radio Engineers and American Institute of Electrical Engineers: Western computor conference. Hotel Statler, Los Angeles. Information: G. H. West, Public Relations Dept., Consolidated Engineering Corp., Pasadena 3, Calif.

February 9-11, American Road Builders' Association: Annual meeting. Hotel Statler, Boston. Association address: 1319 F St. NW, Washington 4. Secretary: Gen. Eugene Reybold.

February 15-19, Automotive Electric Association: Annual meeting. Edgewater Beach hotel, Chicago. Association address: 582 Michigan Bldg., Detroit 26. Secretary: S. W. Potter.

February 16-19, American Institute of Mining & Metallurgical Engineers: Annual meeting. Hotel Statler, Los Angeles. Institute address: 29 W. 39th St., New York 18. Secretary: E. H. Robie.

February 16-19, Industrial Ventilation Conference: Michigan State College, E. Lansing, Mich. Cosponsor: Division of Industrial Health, Michigan Dept. of Health. Information: K. E. Robinson, Division of Industrial Health, Lansing 4.

February 18-20, Society of the Plastics Industry Inc.: Annual reinforced plastics conference. Shoreham hotel, Washington. Society address: 67 W. 44th St., New York 36. Executive vice president: William T. Cruse.

March 2-6, American Society for Testing Materials: Spring meeting. Hotel Statler, Detroit. Society address: 1916 Race St., Philadelphia. Secretary: Robert J. Painter.

March 2-6, Pittsburgh Section, American Chemical Society and Spectroscopy Society of Pittsburgh: Pittsburgh conference on analytical chemistry and applied spectroscopy. Hotel William Penn, Pittsburgh. Information: L. E. Pitzer, U. S. Steel Co., 525 Wm. Penn Place, Pittsburgh 30.

March 3-5, Society of Automotive Engineers: National passenger car, body and materials meeting. Hotel Sheraton-Cadillac, Detroit. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

March 6, Bituminous Coal Research Inc.: Annual meeting. Netherland Plaza hotel, Cincinnati. Institute address: 2600 First National Bank Bldg., Pittsburgh 22. Secretary: C. A. Reed.

March 8-11, American Institute of Chemical Engineers: Annual spring meeting. Hotel Buena Vista, Biloxi, Miss. Institute address: 120 E. 41st St., New York 17. Secretary: Stephen L. Tyler.

March 11, Foundry Education Foundation: Annual meeting and technical, university & industry advisory committee conference. Hotel Cleveland, Cleveland. Foundation address: Terminal Tower, Cleveland 13. Executive director: George K. Dreher.

March 11-12, Society of the Plastics Industry Inc.: Annual Canadian conference. General Brock hotel, Niagara Falls, Canada. Society address: 67 W. 44th St., New York 36. Executive vice president: William T. Cruse.

March 15-19, American Chemical Society: Spring meeting. Hotels Statler and Biltmore, Los Angeles. Society address: 1155 16th St. NW, Washington 6. Assistant secretary: R. M. Warren.

March 16-18, National Association of Waste Material Dealers: Annual meeting. Hotel Conrad Hilton, Chicago. Association address: 271 Madison Ave., New York 16. Secretary: Clinton M. White.

March 16-20, National Association of Corrosion Engineers: Annual conference. Hotel Sherman, Chicago. Association address: 919 Milam Bldg., Houston 2. Secretary: A. B. Campbell.

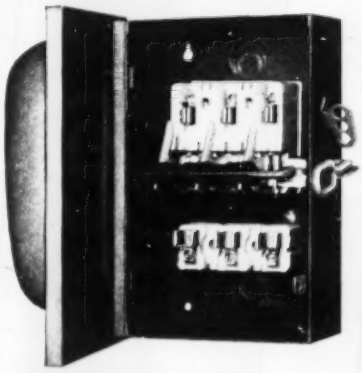
March 17-18, Steel Founders' Society of America: Annual meeting. Edgewater Beach hotel, Chicago. Society address: 920 Midland Bldg., Cleveland. Secretary: F. Kermit Donaldson.

March 18-20, American Society of Tool Engineers: Annual meeting. Hotel Statler, Detroit. Society address: 10700 Puritan Ave., Detroit 21. Executive secretary: Harry E. Conrad.

March 19, National Industrial Conference Board: General session. Netherland-Plaza hotel, Cincinnati. Board address: 247 Park Ave., New York. Secretary: Clyde L. Rogers.

March 19-20, American Hot Dip Galvanizers Association Inc.: Annual meeting. Netherland Plaza hotel, Cincinnati. Association address: 1306 First National Bank Bldg., Pittsburgh 22. Secretary: Stuart J. Swensson.

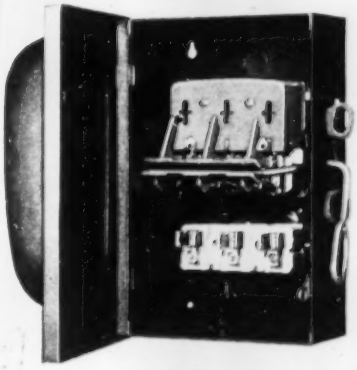
3 LINES OF SAFETY SWITCHES *for* 3 DIFFERENT MARKETS



one line can't do two or three jobs without compromising price and performance!

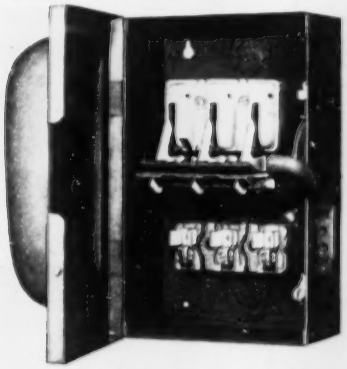
GENERAL PURPOSE

90,000 line designed for residential, commercial and other applications where price is limiting and the service factor is not great.



INDUSTRIAL

40,000 line designed for general industrial or institutional and commercial applications where the service factor is greater and price is an important consideration. MEETS BOTH GOVERNMENT AND NEMA SPECIFICATIONS FOR TYPE A SWITCHES.



HEAVY-DUTY INDUSTRIAL

80,000 and 50,000 line designed for mass production industries where price is secondary to continued performance under conditions of severe service and maximum safety. The 50,000 line is used where space is limited. BOTH ARE TYPE A but go far beyond those requirements.

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SQUARE D COMPANY

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In general, if you use from 300,000 cubic feet per month to 500 tons (or more!) per day

Steel

Decarburization
Furnace enrichment
Scarfing
Welding and cutting

Chemical

Production of synthesis gas for
Ammonia
Acetylene
Methanol, Etc.

from ONE Generator

NITROGEN

If you need large quantities of low-cost, high-purity nitrogen—

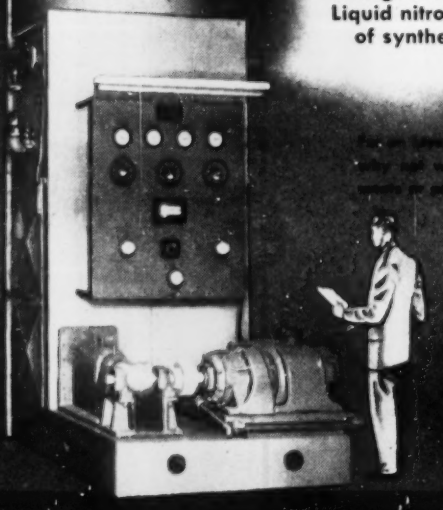
Or, if you use oxygen in quantity, and also need nitrogen

Steel

Annealing
Heat treating
Inert atmospheres
Furnace brazing

Chemical

Ammonia synthesis
Atmosphere control
Nitrogen for drug making
Liquid nitrogen scrubbing of synthesis gas



Air Products INCORPORATED

High-Purity and Tonnage

OXYGEN-NITROGEN GENERATORS

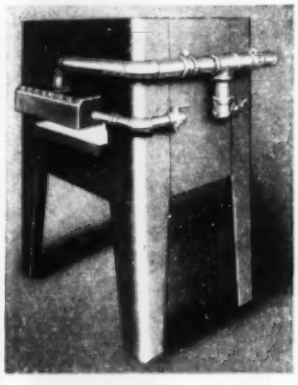
NEW PRODUCTS and equipment

Reply cards on page 93 will bring you more information on any new products and equipment in this issue

Improved Forging Furnace

. . . good operator protection

Firing method protects operator from extreme heat usually associated with forging furnaces. By introducing gas and air at the slot, flames are kept in the furnace and



cannot come out the front. Neither water nor air curtain is required.

In addition, scale is held to a minimum because of luminous flame achieved by gas and air introduction method. Circular motion of gases inside the furnace permits complete combustion. Slot is of uniform height, without obstructions, and can be made in any length. Morrison Industries Inc., Dept. ST, 17100 Miles Ave., Cleveland 28, O.

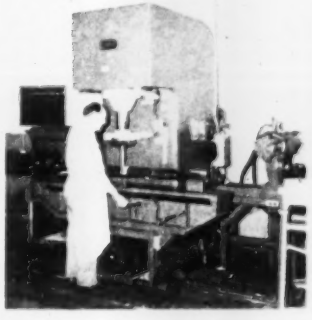
USE REPLY CARD—CIRCLE No. 1

Forcing, Straightening Presses

. . . capacities: 15 to 300 tons

Gap-type presses for forcing and straightening operations are available in 11 forcing and 11 straightening models. All are powered electrically with capacities ranging from 15 to 300 tons.

Straightening presses have a self-contained power unit and adjustable stroke control for both directions of stroke. Combined hand and foot lever provides sensitivity

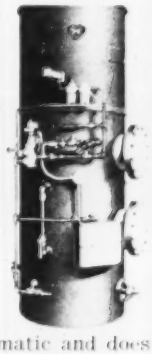


that permits operator to apply any pressure up to maximum by increasing pressure on the control valve. Forcing presses have a two-speed ram advance and extra-large table, permitting their use on a wide variety of operations. Stroke can be preset for both directions. Dake Engine Co., Dept. ST, Grand Haven, Mich.

USE REPLY CARD—CIRCLE No. 2

Blast Cleaning Machine

. . . continuous blast cycle



This automatic abrasive blast cleaner is a double chamber machine with continuous blast cycle that eliminates shutdown time normally required for reloading. Refilling cycle is entirely automatic and does not depend on outside sources, such as a synchronized timing device, motor-driven pumps or valves.

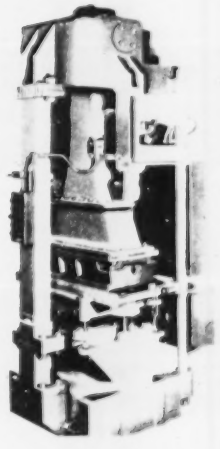
Built-in cycle unit is not influenced by type or rate of abrasive flow. Macleod Co., Dept. ST, 2332 Bogen St., Cincinnati 22, O.

USE REPLY CARD—CIRCLE No. 3

Improved Core Blower

. . . chamber tilts for refill

Core blower is designed for reduced maintenance, greater operating ease and increased output. One important feature is the Tilt-Fill sand chamber that tilts backward



on antifriction bearings for refills after a core is blown. When chamber is filled, it tilts forward again against a positive stop that assures accurate alignment of sand chamber and core box. Sand refill is timer controlled.

In addition to accurate alignment, this feature eliminates need for tracks, springs and wheels required when chamber is transferred to refill. Result is simplified assembly requiring minimum maintenance. Blower operates on

a 10-second cycle, pushbutton controlled and manually or automatically operated. Core area is 12 x 34 inches, with 15-inch maximum depth and 10-inch draw. Sutter Products Co., Dept. ST, 2005 Westwood Ave., Dearborn, Mich.

USE REPLY CARD—CIRCLE No. 4

Metal Disk Sander

. . . reaches difficult angles

Model 85 disk sander is a versatile grinding and deburring machine used also for chamfering and rounding of corners. The 10-inch sander is well adapted for getting into difficult angles. Unit is built from heavy cast iron with preci-

sion machined and balanced face plate to eliminate vibration.

Table is accurately ground and slotted to accommodate a miter gage for forming any compound angle up to 45 degrees. Table size is $15\frac{1}{2}$ x $9\frac{3}{4}$ inches; height, 12 inches. Dust collector is offered for easy attachment. Tomlee Tool & Engineering Co. Inc., Dept. ST, Minneapolis 1, Minn.

USE REPLY CARD—CIRCLE No. 5

Small Electric Counter

. . . with front panel mounting

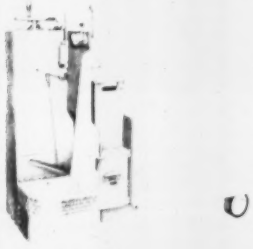
A small compact, four-digit electric counter is made with front panel mounting and front of panel reset. Requiring a panel opening of 2 13/16 x 1 11/16 inches, the device is inserted from the front and attached by four screws. With a current draw of approximately 3 watts, counter may be operated in the plate circuit of electronic tubes as well as actuated by any suitable switch. Production Instrument Co., Dept. ST, 704-16 W. Jackson Blvd., Chicago 6, Ill.

USE REPLY CARD—CIRCLE No. 6

Electric Platform Truck

. . . operates in 6-foot aisles

Riding-type electric platform truck permits 6-foot aisle operation. The compact, lightweight and maneuverable handling unit is made in 6, 7, 9 or 11-inch plat-



form heights with 1000-pound capacity. Platform lengths vary from 36 to 72 inches; overall lengths, from 61 to 97 inches.

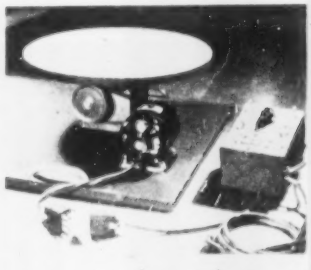
The truck, third model in the manufacturer's Transveyor line, features four-wheel construction with compensating suspension. This provides load equalization on both front wheels, regardless of floor conditions. Automatic Transportation Co., Dept. ST, 149 W. 87th St., Chicago 20, Ill.

USE REPLY CARD—CIRCLE No. 7

Production Turntable

. . . remote control available

Production turntable is controllable from a remote point, instantly reversible and completely variable in speed from 0 to 20 rpm. Like a radio station control, speed of



the Flexi-Turn table can be accelerated or decelerated at will by a simple dial.

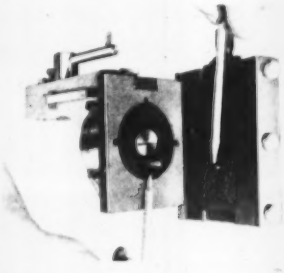
Advantages are reported where work speed should vary with run, job or operation. Processes include testing, gaging, inspecting; packaging, packing, collating; soldering, bronzing, welding; and assembly. To free operator's hands, both reversing and speed switches can be modified for foot control. Disk is 18 inches diameter, mounted on an 11-inch diameter casting that handles any load to 200 pounds. Gale Dorothea Mechanisms, Dept. ST, 81-01 Broadway, Elmhurst, N. Y.

USE REPLY CARD—CIRCLE No. 8

Grinding Wheel Dresser

. . . micrometer base detachable

Versatile grinding wheel dresser can be used for cylindrical or surface grinding. Snapped out of its micrometer base it is ready, with proper fixtures, for cylindrical



grinding to 0.0001-inch accuracy. It can be used in its base for surface grinding to the same accuracy. In addition, the unit is applicable to under-the-wheel dressing.

Angles are dressed by continuing to push the handle in either or both directions after radius is formed. Diamond returns to center position automatically after dressing the angles. Dressers swivel on stainless steel ball bearings, completely protected from dust. J & S Tool Co. Inc., Dept. ST, 644 W. Mt. Pleasant Ave., Livingston, N. J.

USE REPLY CARD—CIRCLE No. 9

Cleaning Solvent

. . . for assembled motors

This solvent cleans electric motors and generators while they are still assembled. A motor can be completely submerged in the cleaner, plugged into electric current and allowed to run from 3 to 5 minutes. Motor is removed and dried with compressed air. Also, the

cleaner can be sprayed into the intake side of the motor while it is in operation. Shaler Co., Dept. ST, Waupun, Wis.

USE REPLY CARD—CIRCLE No. 10

Air Compressing Unit

. . . processes regular plant air

Instrument-quality compressed air is provided by dehydrating and filtering ordinary plant air in the model B-30-D compressing unit. Filtering unit is made of wire mesh, to which flannel is securely attached. Cartridge has a radial fin design that provides over 540 sq in. of filtering area. When the filter becomes dirty, entire cartridge can be replaced quickly.

Condensing unit is designed to provide greatest possible heat exchange area. As air passes over the 400-sq in. surface area, its dew point is lowered to within 2 or 3 degrees of cooling water temperature. A float-operated, snap-action trap is an integral part of each unit. Hankison Corp., Dept. ST, Biltmore Bldg., 951 Banksville Rd., Pittsburgh 16, Pa.

USE REPLY CARD—CIRCLE No. 11

High-Speed Spin Tester

. . . checks vibration effects

Spin testing unit is designed for high-speed testing of jet engine parts. Equipment is made in three sizes for testing parts weighing a maximum 2500, 200 and 15 pounds. The first takes maximum part diameter of 55 inches and spins at 25,000 rpm; the second, 20 inches diameter at 60,000 rpm; the third, 15 inches diameter at 100,000 rpm.

Tester is comprised of a vacuum service unit, spin pit and turbine and remote control operating stand. Rotating the part at very high speeds subjects it to abnormal centrifugal force, providing a check on mechanical perfection

Presses transmit less vibration, increase floor and machine life, when mounted on UNISORB.

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and vibration characteristics. The process can also be used to check bond of plating to various parts. To cut temperature rise from air friction, the spin pit is evacuated

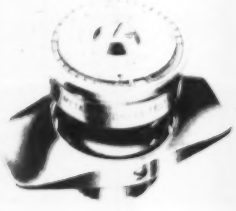
down to about 200 microns of mercury absolute. Warren Brothers Mfg. Division, Warren Brothers Roads Co., Dept. ST, Cambridge, Mass.

USE REPLY CARD—CIRCLE No. 12

Portable Hardness Tester

. . . gives on-the-job readings

Ernst tester makes available a portable instrument for superficial on-the-job readings, permitting metal hardness tests without damaging the material or part. Tester gives direct dial readings in Rock-



well 15N scale, 70-95. In use, tester is simply placed on material and handgrips pressed down to get a direct reading.

Design eliminates base-plate or pressure screw clamp attachment. Tester has spring-loaded diamond penetrator indentor. Movement of indentor into material is magnified about 3000 times by fluid displace-

USE A REPLY CARD

Just circle the corresponding number of any item in this section for more information.

INFORMATION

AVAILABLE FOR THE ASKING

69. Induction Motors

Onsrud Machine Works, Motor Div. Data pertinent to application of high speed induction motors from ¼ to 100 hp with spindle speeds ranging from 3600 to 21,000 rpm is contained in 12-page illustrated bulletin 1112. Proper placement of motor is covered along with four types of motor braking. Motors feature centrifugal thrust loader built into spindle and bearing assembly.

70. Substation Transformers

Wagner Electric Corp. A table listing standard accessories for various ratings of oil-filled and Noflamol unit substation transformers can be yours by requesting this interesting issue of Wagner Industrial Product News. If you specify transformers between 112½ to 2000 kva, you'll want this information.

71. Chromium Type Stainless

Sharon Steel Corp. Fabricating instructions and much other useful information on straight chromium type stainless steel is contained in 12-page well-illustrated booklet. Properties and typical applications are given.

72. O-Ring Data

Graton & Knight Co. Brief but comprehensive data on manufacture and application of O-rings as static and dynamic seals is contained in 16-page illustrated booklet No. 1000. Groove machining details for use with and without back up or nonextrusion washers are also tabulated. Properties of basic polymers are outlined, and ASTM and AMS specs are charted as well.

73. Pumps

Deming Co. Do you want 96-pages of facts, specifications, application information and details of a complete line of pumps? You can get just that in 96-page illustrated industrial catalog I-52 on industrial pumps. Among types covered are vertical and horizontal centrifugal, turbine, rotary, piston and triplex pumps. Piping and pumping data are tabulated in engineering reference section.

74. Fabricated Fittings

Naylor Pipe Co. Specifications and photos of standard and special fabricated fittings for light weight pipe contained in 4-page bulletin 525 which serve as a practical help in planning piping and equipment layouts.

75. Retaining Rings

Waldes Kohinoor Inc. 52-page catalog on "Truarc Retaining Rings" is packed with engineering specifications and other data covering 17 different types and more than 600 different sizes. Rings are made of carbon spring steel from 0.250 through 1-in. sizes and have tensile strength limits within range of 238,000 to 280,000 psi. Accessory tools are also covered.

76. Pipe Prices

National Supply Co., Spang-Chalfant Div. Price, discount and size information on the various types of pipe offered by this company are found on card No. 17. Nominal pipe size, wall thickness and other data are given.

77. Unit Heaters

D. J. Murray Mfg. Co. Illustrated folder on Grid unit heaters shows typical installations of these industrial space heaters and includes testimonials of users as well as complete data on various models.

78. Chucking Tools

Scully-Jones & Co. A holding method taking advantage of the elastic properties in metal is used in Roll-Lock chucking tools, described and illustrated in 52-page bulletin No. 17-50. Standard stock sizes of mandrels, arbors and chucks are listed, along with special tools and applications.

1-12-53

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2	12	22	32	42	52	62	72	82
3	13	23	33	43	53	63	73	83
4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
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79. Tool Bits & Turning Tools

Gorham Tool Co. Manufacturing methods, design features and sizes of Gorham ground tool bits and turning tools are found in 4-page illustrated bulletin. Tools for commercial lathe, heavy duty turning, soft or abrasive stock and for fast parting are listed.

80. Ball & Roller Bearings

Gwilliam Co. 20-page illustrated catalog No. 28 describes various types of ball thrust, thrust, journal roller, industrial roller and special bearings as well as steel, bronze, Monel and stainless steel balls and steel rolls. Complete specifications are given on each series.

81. Metal Stampings

Crosby Co. How to improve products through metal stampings is theme of 24-page well-illustrated booklet which explains and illustrates methods of improving products, reducing their cost and extending their service life. Concise analyses of 13 stamped parts and assemblies are presented.

82. Fabrication Facilities

E. D. Jones & Sons Co. Photographs of plant and equipment, data on plant facilities and details of equipment, including shears, punches, press brakes and welding, flame-cutting and grit blasting machinery, are included in 4-page brochure on plant of this paper machinery producer.

83. Rust Preventive Packaging

Angier Sales Corp. Illustrated booklet "Vapor from Paper Stops Rust" shows dozens of uses of VPI Wrap for packaging all types of metal parts and assemblies for shipment, handling or storage. Easy to use and available in wide range of sizes, VPI Wrap protects metal without use of other compounds.

84. Package Testing

Hinde & Dauch Paper Co. "How to Test Corrugated Boxes" is title of 24-page illustrated booklet which is No. 11 in the Little Packaging Library. It describes all of the factors needed to assure selection and application of the proper corrugated container for packaging various products.

85. High Strength Steel

Jones & Laughlin Steel Corp. "The Transportation Steel — Otis-ColoY" is the title of a 32-page illustrated brochure which outlines the properties, applications and fabrication methods for this high strength steel. It resists corrosion and abrasion, is easily welded and formed and has great strength for equivalent weight.

86. Degreaser Operation

Manufacturers Processing Co. Do's and don't's for safety, economy and clean work are presented in detail in this 24-page illustrated "Degreaser Operation Manual." Vapor degreasing advantages are listed and trouble-shooting hints are given.

EDITORIAL REPRINTS:

87. Seattle Steel Plant

Seedelhuber Steel Rolling Mill Corp.'s future expansion plans are reported by Seattle correspondent R. C. Hill in STEEL reprint "Pacific Northwest Steel Plant in Commercial Operation." Facilities for increasing mill's capacity from 60,000 to 200,000 tons a year are scheduled and include a 70-ton electric furnace.

88. Power System Planning

How adequate is the so-called "adequate" electrical system in most plants? Do all segments of the system reflect design flexibility? They should be able to handle normal and emergency loads and adjust to expanded future loads. F. L. Aime, electrical engineer of Anaconda Wire & Cable Co., outlines a system that plans for future loads.

89. Welding Jet Parts

Various materials used in the fabrication of jet engines invite application of several welding methods. Welding of dissimilar metals is only one of the problems. K. H. Koopman, Linde Air Products Co. engineer, discusses tungsten-arc, shielded inert gas metal arc and submerged arc welding in STEEL reprint "Welding Meets Jet-Engine Challenge."

90. Jig Versatility

"Versatility in a Jig" is title of STEEL reprint by F. E. Bailey, English tool engineer, in which he describes with full line drawings a jig which will enable 16 different sized holes to be drilled in any $\frac{1}{4}$ to $1\frac{1}{2}$-in. diameter shaft. Range of drill bushings mounted over three different-sized V-blocks gives this jig its versatility.

1	11	21	31	41	51	61	71	81
2	12	22	32	42	52	62	72	82
3	13	23	33	43	53	63	73	83
4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
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ment in the capillary tube. Maximum indentation is 0.003-inch; maximum diameter of penetration, 0.006-inch. Newage International Inc., Dept. ST, 235 E. 42nd St., New York 17, N. Y.

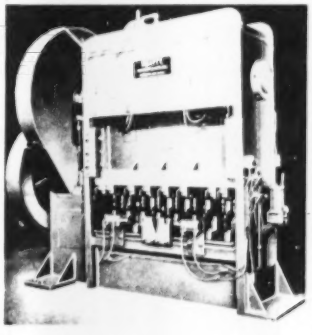
USE REPLY CARD—CIRCLE No. 13

Plate and Angle Punch

. . . capacity: 250 tons

Angles, webs of sections or flat plates can be punched on this heavy No. 10 Guillotine plate and angle punch. The model has 250 ton capacity, is furnished with tools and positioners.

Distance between housings is 74 inches. Ram is 72 inches long,



right to left; 24 inches, front to back. Ram has $2\frac{1}{2}$-inch stroke. Drive is of mechanical type. Beatty Machine & Mfg. Co., Dept. ST, Hammond, Ind.

USE REPLY CARD—CIRCLE No. 14

Measuring Instrument

. . . checks drill point angle

Matrix drill point measuring instrument cheks the correct drill point angle and its centrality. On a common indicator dial centrality is read directly to 0.001-inch and angle to 1 degree. Instrument is made in two sizes; $\frac{1}{4}$ to $\frac{3}{4}$-inch and $\frac{3}{4}$ to $2\frac{1}{2}$ inches. Engis Equipment Co., Dept. ST, 431 S. Dearborn St., Chicago 5, Ill.

USE REPLY CARD—CIRCLE No. 15

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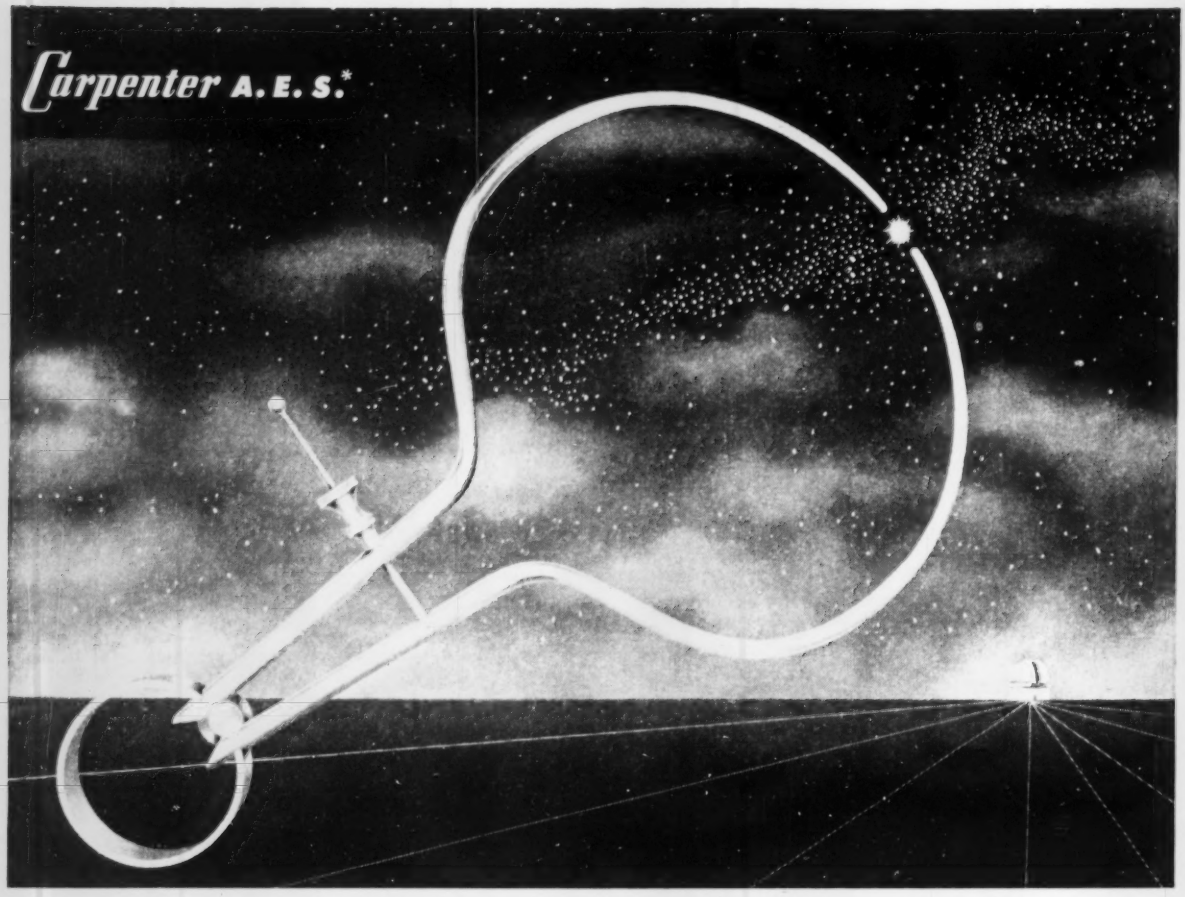


Finding a Faster Way to Measure a Star

Another example of how Carpenter ***A**pplication **E**ngineering **S**ervice is working for industry*

The giant 200-inch telescope at California's Mt. Palomar Observatory was picking up thousands of stars missed by other telescopes. But the job of measuring and coordinating the data revealed by the photographs was so big that astronomers couldn't keep abreast of it. Then the delicate astrophotometer was developed and the problem was solved. The new device *mechanically* computes the size of a star in a fraction of the time trained astronomers could do it with former devices.

Naturally, such a precise instrument posed quite a few materials problems. One was the type of steel for the hardened ways on which the machine travels horizontally back and forth. Many different special steels were tried. All failed because they couldn't meet the exacting straightness that was required.

Then, Carpenter **A**pplication **E**ngineering **S**ervice was called in . . . and Carpenter Vega, a new air-hardening steel that shows practically no distortion in heat treatment was put to work. Used successfully for thousands of critical tool and die applications, Vega has proved to be the only steel found to stay straight enough in the 20" lengths of the ways. Are there applications in *your* plant where a steel providing this kind of performance could give your product extra competitive advantages?

Time and again, industry is finding new ways to save money and improve the salability of products with the help of Carpenter **A**pplication **E**ngineering **S**ervice . . . a service that uses *imagination* to apply steels for best results. A.E.S. is yours to profit by when you do business with Carpenter. THE CARPENTER STEEL COMPANY, 139 W. Bern St., Reading, Pa.

Carpenter STEEL — **Tool, Alloy and Stainless Steels**

Pioneering in Improved Tool, Alloy and Stainless Steels Through Continuing Research

The Market Outlook

CONTINUED heavy demand for steel is keeping steel producers cautious in booking new business. They don't want to be loaded with more orders than they can fill.

Some mills normally don't book orders for more than a month in advance, but of those that book on a quarterly basis a good many are not accepting orders now for delivery beyond April on the most-wanted products. Many of the mills are already burdened with a carryover of orders.

THE BRAKE—Influencing producers to go slow in booking second-quarter orders is the conclusion that industrial activity, and accompanying steel demand, will remain strong through the first half of this year. Too, there is growing belief that good business will continue into and through the last half.

Another factor influencing caution in order-taking is the question of what course General Eisenhower, after he is inaugurated as President, takes to end the Korean war. A sharp step-up in our offensive might intensify steel demand.

COLOSSUS—Regardless of what happens, the United States has more capacity than ever before to supply the steel needs. The American Iron & Steel Institute announced the steel industry's capacity for producing steel for ingots and castings was 117,547,470 net tons as of Jan. 1, 1953. However, the weekly operating rate of the industry will be lower, at least for awhile, than it was in the latter part of 1952, although tonnage of production will be no less, but probably greater. During all of 1952, the operating rate was based on the industry's capacity as of Jan. 1 of that year, even though capacity grew 8,959,800 tons during the year. Now the rate will be calculated on the Jan. 1, 1953, capacity of 2,254,459 net tons a week, instead of the Jan. 1, 1952, total of 2,077,040 tons.

Reflecting the revision, the steel industry's rate of producing steel for ingots and castings in the week ended Jan. 10 was 98 per cent of capacity. On the old basis it would have been 106.5 per cent. Yield was approximately 2,213,000 net tons.

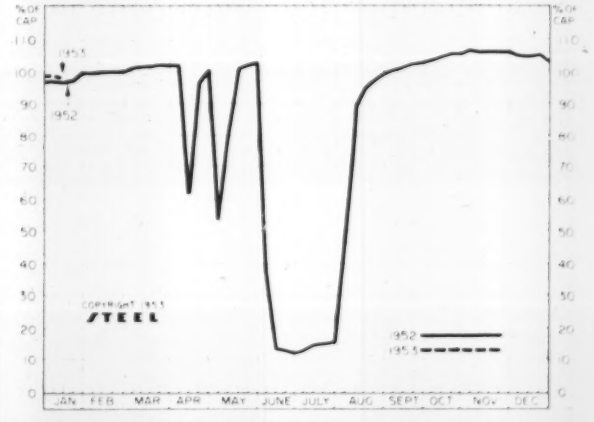
WARY—Even though steel demand and production now are high and optimism for the last half of the year is growing, some people in the steel industry have their fingers crossed for the second six months. They note the low level of business in the bolt and nut industry, which they say has been a good barometer of what the steel industry can expect six months later. Hurting bolt and nut makers is competition from European countries, especially France and Belgium. Foreign makers not only are making themselves felt in the export market but they are competing to an increasing degree for domestic business along the Eastern Seaboard with prices ranging from 5 to 10 per cent under domestic levels.

COMPETITION—In Canada, too, the competition from European countries will be felt increasingly. It is now apparent that European steel mills will reduce prices to retain the grip they achieved on the Canadian steel markets in recent years when steel was in short supply. Further price cuts may be made later as steel becomes increasingly available on the European continent.

IMPACT—The automobile and appliance industries' renewed pressure for steel is felt over a number of products. One is stainless strip, which the auto makers are using increasingly for bright work, including a snap-on attachment that gives the resemblance of wire wheels. Surge in demand for steel for appliances is accompanied by a strengthening in demand for silicon strip for motors for them.

MORE FREEDOM—Still hindering the procurement of steel are government regulations, although the yearend brought relaxation of some of them. On Jan. 1, steel inventory limits automatically returned to 45 days. Since the steel strike they had been 30 days. This return, however, should not have any great effect on current demand for steel. The Controlled Materials Plan limits the amount of steel consumers can buy.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Jan. 10	Change	Same Week 1952	Same Week 1951
Pittsburgh	103.5	0.5*	98	97.5
Chicago	105.5	1*	102.5	101.5
Mid-Atlantic	100	0	101.5	100
Youngstown	106	0	106	105
Wheeling	101	0.5	104	95
Cleveland	106	1*	94.5	103
Buffalo	106.5	0*	104	104
Birmingham	108	0	104	109
New England	89	1	91	88
Cincinnati	93	23*	103	92
St. Louis	93	4.5	78	95
Detroit	101.5	5.5	104.5	107
Western	109	1	107.5	102
Estimated national rate	98	0.5	96.5	96

*Based on weekly steelmaking capacity of 2,254,459 net tons in 1953, 2,077,040 tons in 1952, 1,999,034 tons in 1951.

*Change from revised rate for preceding week.

Composite Market Averages

FINISHED STEEL PRICE INDEX Bureau of Labor Statistics	Jan. 6 1953	Dec. 30 1952	Month Ago	December Average
(1947-1949 = 100)	130.7	130.6	130.6	130.6

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)
Week Ended Jan. 6, 1953

Units are 100 lb except where otherwise noted below in parentheses. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	$5.775	Sheets, C.R. carbon	$5.275
Track spikes	6.640	Sheets, galv.	6.915
Track bolts	9.925	Strip, C.R. carbon	5.100
Tie plates	4.775	Strip, C.R. stainless, chr.	0.325
Joint bars	4.925	Pipe, black, buttweld (100 ft)	7.090
Plates, carbon	4.120	Pipe, galv. buttweld (100 ft)	8.967
Structural shapes	4.280	Boiler tubes (100 ft)	31.663
Bars, tool steel, cbn	1.525	Tin plate (100 lb base box)	8.560
Bars, 3120 alloy	6.775	Terne plate (100 lb base box)	7.750
Bars, stainless, chr.	0.145	Wire, carbon, merchant	6.075
Bars, carbon	4.100	Wire, fence, galv.	6.125
Bars, reinforcing	4.000	Nails (100 lb keg)	7.110
Bars, C.F. carbon	5.925	Wire, barbed (80 rod spool)	8.920
Sheets, H.R. carbon	4.125	Woven wire fence (20 rod roll)	13.720

FINISHED PRICE INDEX, Weighted Calculated by STEEL*	Jan. 8 1951	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av. 100)	181.31	181.31	181.31	171.92	132.95
Index in cents per lb	4.912	4.912	4.912	4.657	3.601

ARITHMETICAL PRICE COMPOSITES Calculated by STEEL*					
Finished Steel NT	$110.95	$110.95	$110.95	$106.32	$78.93
No. 2 Fdry. Pig Iron, GT	44.04	44.04	44.04	42.24	38.28
Basic Pig Iron, GT	43.66	43.66	43.66	42.16	38.44
Malleable Pig Iron, GT	44.77	44.77	44.77	43.27	39.48
Steelmaking Scrap, GT	43.00	43.00	43.00	43.00	40.35

For explanation of weighted index see STEEL, Sept. 16, 1946, p. 84; of arithmetical price composites, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	Jan. 8 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.90
Bars, H.R., del. Philadelphia	4.302	4.302	4.302	4.221	3.356
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.55	3.55
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.80
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.80
Shapes, del. Philadelphia	4.13	4.13	4.13	3.945	2.968
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.95
Plates, Chicago	3.90	3.90	3.90	3.70	2.95
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.40
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.40
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60-75	2.80
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.80
Sheets, C.R., Pittsburgh	4.425	4.425	4.425	4.35	3.55
Sheets, C.R., Chicago	4.425	4.425	4.425	4.35	3.55
Sheets, C.R., Detroit	4.475	4.475	4.475	4.40	3.70
Sheets, Galv., Pittsburgh	4.075	4.075	4.075	4.80	3.90
Strip, H.R., Pittsburgh	3.75	4.225	3.75	4.225	3.75	4.225	3.75	4.00	2.80
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.80
Strip, C.R., Pittsburgh	5.10	5.50	5.10	5.50	5.10	5.50	4.65	5.35	3.55
Strip, C.R., Chicago	5.35	5.35	5.35	5.00	3.65
Strip, C.R., Detroit	5.30	6.05	5.30	6.05	5.30	6.05	4.85	5.60	3.70
Wire, Basis, Pittsburgh	5.10	5.225	5.10	5.225	5.10	5.225	4.85	5.10	3.625
Nails, Wire, Pittsburgh	6.20	6.15	6.20	6.15	6.20	6.15	5.90	6.20	4.625
Tin plate box, Pittsburgh	$8.95	$8.95	$8.95	$8.70	$6.70

SEMIFINISHED					
Billets, forging, Pitts. (NT)	$50.00	$50.00	$50.00	$66.00	$46.00
Wire rods, 5/8", Pitts.	4.45	4.45	4.45	4.10-50	3.05

PIG IRON, Gross Ton					
Bessemer, Pitts.	$53.00	$53.00	$53.00	$51.00	$40.00
Basic, Valley	51.00	51.00	51.00	52.00	37.00
Basic, del. Phila.	59.25	59.25	59.25	56.61	42.004
No. 2 Fdry., Pitts.	53.00	53.00	53.00	52.00	39.00
No. 2 Fdry., Chicago	53.00	53.00	53.00	52.00	38.00
No. 2 Fdry., Valley	53.00	53.00	53.00	52.00	36.00
No. 2 Fdry., del. Phila.	59.25	59.25	59.25	57.11	42.504
No. 2 Fdry., Birm.	51.38	51.38	51.38	48.88	37.88
No. 2 Fdry., Birm., del. Cin.	58.93	58.93	58.93	54.49	40.74
Malleable, Valley	53.00	53.00	53.00	52.00	38.00
Malleable, Chicago	53.00	53.00	53.00	52.00	38.00
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	50.00
Ferromanganese, Etna, Pa.	228.00	228.00	228.00	188.00	141.00†

†Duty paid, Pittsburgh

SCRAP, Gross Ton (including broker's commission)					
No. 1 Heavy Melt., Pitts.	$44.00	$44.00	$44.00	$44.00	$40.00
No. 1 Heavy Melt., E. Pa.	41.50	41.50	41.50	42.50	41.00
No. 1 Heavy Melt., Chicago	42.50	42.50	42.50	42.50	38.75
No. 1 Heavy Melt., Valley	44.00	44.00	44.00	44.00	39.75
No. 1 Heavy Melt., Cleve.	43.00	43.00	43.00	43.00	39.25
No. 1 Heavy Melt., Buffalo	43.00	43.00	43.00	43.00	43.00
Rails, Rerolling, Chicago	52.50	52.50	52.50	52.50	60.00
No. 1 Cast, Chicago	45.00	44.00	45.00	49.00	63.50

Each shipping point.

COKE, Net Ton					
Beehive, Furn. Connlsv.	$14.75	$14.75	$14.75	$14.75	$12.00-13.00
Beehive, Fdry. Connlsv.	17.00	17.00	17.00	17.50	14.00-15.00
Oven, Fdry., Chicago	24.50	24.50	24.50	23.00	18.00

PIG IRON

Basic furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton	Base	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. R2	$56.50	$57.00	$57.50	$58.00
NewYork, del.		60.78	61.28	
Newark, del.	59.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75
Birmingham District				
Alabama City, Ala. R2	50.88	51.38		
Birmingham, R2	50.88	51.38		
Birmingham, S9		51.38		
Woodward, Ala. W13	50.88	51.38		
Cincinnati, del.		58.93		
Buffalo District				
Buffalo, R2	54.50	55.00	55.50	
Buffalo, H1	54.50	55.00	55.50	
Tonawanda, N.Y., W12	54.50	55.00	55.50	
No. Tonawanda, N.Y., T9		55.00	55.50	
Boston, del.	65.15	65.65	66.15	
Rochester, N.Y., del.	57.52	58.02	58.52	
Syracuse, N.Y., del.	59.62	60.12	60.62	
Chicago District				
Chicago, I-3	54.50	55.00	55.00	55.50
Gary, Ind., U-1	54.50		55.00	
Indiana Harbor, Ind., I-2	54.50		55.00	
So. Chicago, Ill., W14	54.50	55.00	55.00	
So. Chicago, Ill., Y1	54.50	55.00	55.00	
So. Chicago, Ill., U1	54.50		55.00	55.50
Milwaukee, del.	56.67	57.17	57.17	57.67
Muskegon, Mich., del.		61.20	61.20	
Cleveland District				
Cleveland, A7	54.50	55.00	55.00	55.50
Cleveland, R2	54.50	55.00	55.00	
Akron, O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain, O., S3	54.50			55.50
Duluth, I-3			55.00	
Erie, Pa., I-3	54.50	55.00	55.00	55.50
Everett, Mass., E1		59.50	60.00	
Fontana, Calif., K1	60.50	61.00		
Granite City, Ill., G4	56.00	56.50	57.00	
St. Louis, del. (incl. 1.5%)	57.15	57.65	58.15	
Ironton, Utah, C11	54.50	55.00		
Geneva, Utah, C11	54.50	55.00		
LoneStar, Tex., L6	60.50	61.00	61.00	
Minnequa, Colo., C10	56.00	56.50	57.00	
Rockwood, Tenn., T5			58.00	
Pittsburgh District				
Neville Island, Pa., P5		55.00	55.00	55.50
Pitts., N&S sides, Aliquippa, del.		56.37	56.37	56.87
McKeesRocks, del.		56.04	56.04	56.54
Lawrenceville, Homestead, Wilmerding, Monaca, del.		56.66	56.66	57.16
Verona, Trafford, del.		57.19	57.19	57.69
Brackenridge, del.		57.43	57.43	57.93
Bessemer, Pa., P5	54.50		55.00	55.50
Clairton, Rankin, So. Duquesne, Pa., U1	54.50			
McKeesport, Pa., N1	54.50			55.50
Monessen, Pa., P7	56.50			
Sharpsville, Pa., S6			55.00	55.50
Steelton, Pa., R2	56.50	57.00	57.50	58.00
Swedeland, Pa., A7	58.50	59.00	59.50	60.00
Toledo, O., I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.42	60.47		
Troy, N.Y., R2	56.50	57.00	57.50	58.00
Youngstown District				
Hubbard, O., Y1	54.50	55.00	55.00	
Youngstown, Y1	54.50	55.00	55.00	
Youngstown, U-1	54.50			55.50
Mansfield, O., del.	59.15	59.65	59.65	60.15

Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos-silicon on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50%, no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton	
(Base 6.00-6.50% silicon; add $1.50 for each 0.5% Si)	
Jackson, O., C2, J1	$65.50
Buffalo, H1	66.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton	
(Base 11.01-11.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.03% max. P)	
Niagara Falls, N.Y., P11	$91.00
Keokuk, Iowa, Openhearth & Fdry., frt. allowed, K2	92.50
Keokuk, oH & Fdry., 1½" lb pigiets, frt. allowed, K2	92.50
Wenatchee, Wash., oH & Fdry., frt. allowed, K2	92.50

CHARCOAL PIG IRON, Gross Ton	
(Low phos, semi-cold blast; differential charged for silicon over base grade, also for hard chilling iron Nos. 3 & 5)	
Lyles, Tenn., T3	$68.50

LOW PHOSPHORUS PIG IRON, Gross Ton	
Cleveland, intermediate, A7	$59.50
Steelton, Pa., R2	62.50
Philadelphia, delivered	66.03
Troy, N.Y., R2	62.50

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Semifinished and Finished Steel Products

Mill prices quoted under GCPR as reported to STEEL Jan. 8, 1953, cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Fontana Calif. K1 $81.00
Munhall Pa. U5 74.00
Seattle S24 75.00

INGOTS, Alloy (NT)
Detroit R7 $87.00
Fontana Calif. K1 83.00
Houston S6 85.00
Midland Pa. C18 87.00
Munhall Pa. U5 87.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer Pa. U5 $70.00
Clairton Pa. U5 70.00
Ensley Ala. T2 70.00
Fairfield Ala. T2 70.00
Fontana Calif. K1 78.00
Gary Ind. U5 70.00
Johnstown Pa. B2 70.00
Lackawanna N.Y. B2 70.00
Munhall Pa. U5 70.00
So.Chicago Ill. U5 70.00
So.Duquesne Pa. U5 70.00

Carbon, Forging (NT)
Bessemer Pa. U5 $70.00
Buffalo R2 70.00
Canton O. R2 70.00
Clairton Pa. U5 70.00
Cleveland R2 70.00
Conshohocken Pa. A3 77.00
Detroit R7 71.00
Ensley Ala. T2 70.00
Fairfield Ala. T2 70.00
Fontana Calif. K1 76.00
Gary Ind. U5 70.00
Geneva Utah C11 70.00
Houston S6 78.00
Johnstown Pa. B2 70.00
Lackawanna N.Y. B2 70.00
Los Angeles B3 76.00
Munhall Pa. U5 70.00
Seattle B3 76.00
So.Chicago Ill. B2 U5 W11 70.00
So.Duquesne Pa. U5 70.00
So.SanFrancisco B3 76.00

Alloy, Forging (NT)
Bethlehem Pa. B2 $76.00
Buffalo R2 76.00
Canton O. R2 76.00
Canton O. T2 78.00
Conshohocken Pa. A3 76.00
Detroit R7 76.00
Fontana Calif. K1 76.00
Gary Ind. U5 76.00
Houston S6 84.00
Ind Harbor Ind. Y1 76.00
Johnstown Pa. B2 76.00
Lackawanna N.Y. B2 76.00
Los Angeles B3 76.00
Massillon O. R2 76.00
Midland Pa. C18 76.00
Munhall Pa. U5 76.00
So.Chicago Ill. B2 U5 W11 76.00
So.Duquesne Pa. U5 76.00
Struthers O. Y1 76.00
Warren O. C17 76.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 $87.50
Canton O. R2 87.50
Cleveland R2 87.50
Fontana Calif. K1 105.00
Gary Ind. U5 87.00
Massillon O. R2 87.00
So.Chicago Ill. R2 87.00
So.Duquesne Pa. U5 87.00

SHEET BARS (NT)
Fontana Calif. K1 U5 $80.00

SKELP
Aliquippa Pa. J5 3.65¢
Munhall Pa. U5 3.50
Warren O. R2 3.50
Youngstown R2 U5 3.50

WIRE RODS
Alton Ill. L1 4.70
Alabama City Ala. R2 4.325
Buffalo W12 4.325
Cleveland A7 4.325
Donora Pa. A7 4.325
Fairfield Ala. T2 4.325
Fontana Calif. K1 5.125
Houston S6 4.725
Johnstown Pa. B2 4.325
Joliet Ill. A7 4.325
Kansas City Mo. S6 4.666
Los Angeles B3 5.125
Minnequa Colo. C10 4.575
Monessen Pa. P7 4.325
No.Tonawanda N.Y. B11 4.325
Pittsburg Calif. C11 4.975
Portsmouth O. P12 4.325
Roebling N.J. R5 4.425
So.Chicago Ill. R2 4.325
Sparrows Point Md. B2 4.425
Sterling Ill. C11 N15 4.325
Struthers O. Y1 4.325
Torrance Calif. C11 5.125
Worcester Mass. A7 4.625

SHEET STEEL PILING
Ind Harbor Ind. I-2 4.67¢
Lackawanna N.Y. B2 4.675
Munhall Pa. U5 4.675
So.Chicago Ill. U5 4.675

STRUCTURALS
Carbon Steel Stand. Shapes
Alabama City Ala. R2 3.85¢
Aliquippa Pa. J5 3.85
Bessemer Ala. T2 3.85
Bethlehem Pa. B2 3.90
Clairton Pa. U5 3.85
Fairfield Ala. T2 3.85
Fontana Calif. K1 4.45
Gary Ind. U5 3.85
Geneva Utah C11 3.85
Houston S6 4.25
Ind Harbor Ind. I-2 3.85
Johnstown Pa. B2 3.90
Kansas City Mo. S6 4.45
Lackawanna N.Y. B2 3.90
Los Angeles B3 4.45
Minnequa Colo. C10 4.30
Munhall Pa. U5 3.85
Niles Calif. c22 P1 4.50
Phoenixville Pa. P1 4.10
Seattle B3 4.50
So.Chicago Ill. U5 W11 3.85
So.SanFrancisco B3 4.10
Torrance Calif. C11 4.45
Weirton W.Va. W6 4.10

Wide Flange
Bethlehem Pa. B2 3.90
Clairton Pa. U5 3.85
Fontana Calif. K1 4.85
Johnstown Pa. B2 3.90
Lackawanna N.Y. B2 3.90
Munhall Pa. U5 3.85
So.Chicago Ill. U5 3.85

Alloy Stand. Shapes
Clairton Pa. U5 4.75¢
Fontana Calif. K1 5.95
Gary Ind. U5 4.75¢
Munhall Pa. U5 4.75¢
So.Chicago Ill. U5 4.75¢

H.S., L.A. Stand. Shapes
Aliquippa Pa. J5 4.50
Bessemer Ala. T2 4.50
Bethlehem Pa. B2 4.50
Clairton Pa. U5 4.50
Fairfield Ala. T2 4.50
Fontana Calif. K1 6.40
Gary Ind. U5 4.50
Geneva Utah C11 4.50
Ind Harbor Ind. I-2 4.50
Ind Harbor Ind. Y1 6.30
Johnstown Pa. B2 4.50
Lackawanna N.Y. B2 4.50
Los Angeles B3 6.35
Munhall Pa. U5 4.50
Seattle B3 6.40
So.Chicago Ill. U5 4.50
So.SanFrancisco B3 6.30
Struthers O. Y1 6.30

H.S., L.A. Wide Flange
Aliquippa Pa. J5 4.50
Bethlehem Pa. B2 4.50
Lackawanna N.Y. B2 4.50
Munhall Pa. U5 4.50
So.Chicago Ill. U5 4.50

BEARING PILES
Munhall Pa. U5 3.85
So.Chicago Ill. U5 3.85

PLATES, High-Strength Low Alloy
Aliquippa Pa. J5 3.90
Bessemer Ala. T2 3.90
Clairton Pa. U5 3.90
Cleveland J2 R2 3.90
Conshohocken Pa. A3 4.20
Coatesville Pa. L7 4.30
Fairfield Ala. T2 3.90
Fontana Calif. c30 K1 4.50
Gary Ind. U5 3.90
Geneva Utah C11 3.90
Houston S6 4.25
Ind Harbor Ind. I-2 3.90
Johnstown Pa. B2 3.90
Kansas City Mo. S6 4.45
Lackawanna N.Y. B2 3.90
Los Angeles B3 4.45
Minnequa Colo. C10 4.30
Munhall Pa. U5 3.90
Niles Calif. P1 4.50
Seattle B3 4.50
So.Chicago Ill. U5 W11 3.90
So.Duquesne Pa. U5 3.90
So.SanFran. Cal. B3 4.20
Sterling Ill. N15 3.90
Struthers O. Y1 3.90
Torrance Calif. C11 4.45
Weirton W.Va. W6 4.10
Youngstown R2 U5 3.90

PLATES, Open Hearth Alloy
Claymont Del. C22 3.95¢
Coatesville Pa. L7 4.05
Conshohocken Pa. A3 4.05
Fontana Calif. K1 6.20
Gary Ind. U5 3.95
Johnstown Pa. B2 3.95
Munhall Pa. U5 3.95
Sharon Pa. S3 3.95
So.Chicago Ill. U5 3.95
Sparrows Point Md. B2 3.95
Warren O. R2 3.95
Youngstown U5 3.95

PLATES, Ingot Iron
Ashland Ky. c30 A10 4.15
Cleveland C1 R2 4.50
Warren O. C1 R2 4.50

PLATES, Carbon Steel
Alabama City Ala. R2 3.90
Aliquippa Pa. J5 3.90
Ashland Ky. c30 A10 3.90
Bessemer Ala. T2 3.90
Claymont Del. c22 4.35
Cleveland J2 R2 3.90
Coatesville Pa. L7 4.35
Conshohocken Pa. A3 4.35
Ecorse Mich. G5 4.45
Fairfield Ala. T2 3.90
Fontana Calif. c30 K1 4.50
Gary Ind. U5 3.90
Granite City Ill. G4 4.60
Geneva Utah C11 3.90
Harrisburg Pa. C6 4.50
Houston S6 4.20
Ind Harbor Ind. I-2 Y1 3.90
Johnstown Pa. B2 3.90
Lackawanna N.Y. B2 3.90
Minnequa Colo. C10 4.20
Munhall Pa. U5 3.90
Pittsburgh J5 3.90
Seattle B3 4.80
Sharon Pa. S3 4.15
So.Chicago Ill. U5 W11 3.90
SparrowsPoint Md. B2 3.90
Steubenville O. W10 3.90
Warren O. R2 3.90
Weirton W.Va. W6 4.20
Youngstown R2 U5 Y1 3.90

PLATES, Carbon A.R.
Fontana Calif. K1 5.65
Geneva Utah C11 5.00

PLATES, Wrought Iron
Add 1.2¢ to base and extras
Economy Pa. B11 8.60

BARS, Hot-Rolled Carbon
Alabama City Ala. R2 3.95
Aliquippa Pa. J5 3.95
Alton Ill. L1 4.50
Atlanta Ga. A11 4.50
Bessemer Ala. T2 3.95
Buffalo R2 3.95
Canton O. R2 3.95
Clairton Pa. U5 3.95
Cleveland R2 3.95
Detroit R7 4.10
Ecorse Mich. G5 4.30
Emeryville Calif. J7 4.20
Fairfield Ala. T2 3.95
Fontana Calif. K1 4.65
Gary Ind. U5 3.95
Houston S6 4.35
Ind Harbor Ind. I-2 Y1 3.95
Johnstown Pa. B2 3.95
Kansas City Mo. S6 4.55
Lackawanna N.Y. B2 3.95
Los Angeles B3 4.65
Milton Pa. B6 4.65
Minnequa Colo. C10 4.10
Niles Calif. P1 4.65
N.Tonawanda N.Y. B11 3.95
Pittsburg Calif. C11 4.65
Pittsburgh J5 3.95
Seattle B3, N14 4.20
So.Chicago Ill. U5 W11 3.95
So.Duquesne Pa. U5 3.95
So.SanFran. Cal. B3 4.20
Sterling Ill. N15 4.55
Struthers O. Y1 3.95
Torrance Calif. C11 4.65
Weirton W.Va. W6 4.10
Youngstown R2 U5 3.95

BAR SIZE ANGLES, S. Shapes
Aliquippa Pa. J5 3.95
Atlanta A11 4.50
Niles Calif. P1 4.65
San Francisco S7 5.00

BAR SIZE ANGLES, H.R. CARBON
Bethlehem Pa. B2 4.15

BARS, Hot-Rolled Alloy
Bethlehem Pa. B2 4.65¢
Buffalo R2 4.65
Canton O. R2 4.65
Canton O. T2 4.72
Clairton Pa. U5 4.65
Detroit R7 4.85
Ecorse Mich. G5 4.95
Fontana Calif. K1 5.25
Gary Ind. U5 4.65
Houston S6 4.95
Ind Harbor Ind. I-2 Y1 4.65
Johnstown Pa. B2 4.65
Kansas City Mo. S6 5.25
Lackawanna N.Y. B2 4.65
Los Angeles B3 5.25
Massillon O. R2 4.65
Midland Pa. C18 4.65
So.Chicago Ill. U5 W11 4.65
So.Duquesne Pa. U5 4.65
Struthers O. Y1 4.65
Warren O. C17 4.65
Youngstown U5 4.65

BAR SHAPES, Hot-Rolled Alloy
Clairton Pa. U5 4.95¢
Gary Ind. U5 4.95
Youngstown U5 4.95

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy
Aliquippa Pa. J5 4.95¢
Bessemer Ala. T2 4.95
Bethlehem Pa. B2 4.95
Clairton Pa. U5 4.95
Cleveland R2 4.95
Ecorse Mich. G5 4.95
Fairfield Ala. T2 4.95
Fontana Calif. K1 4.95
Gary Ind. U5 4.95
Ind Harbor Ind. I-2 4.95
IndianaHarbor Ind. Y1 4.95
Johnstown Pa. B2 4.95
Lackawanna N.Y. B2 4.95
Los Angeles B3 4.95
Massillon O. R2 4.95
Minnequa Colo. C10 4.95
Pittsburgh J5 4.95
Seattle B3 4.95
So.Duquesne Pa. U5 4.95
So.SanFrancisco B3 4.95
Struthers O. Y1 4.95
Youngstown U5 4.95

BARS, Cold-Finished Carbon
Ambridge Pa. W8 4.95¢
BeaverFalls Pa. B2 4.95
BeaverFalls Pa. M12 4.95
Buffalo B5 4.95
Camden N.J. P11 4.95
Carnegie Pa. C12 4.95
Chicago B4 4.95
Chicago W8 4.95
Cleveland A7 c20 4.95
Detroit P17 R7 4.95
Donora Pa. A7 4.95
Elyria O. W8 4.95
Franklin Park Ill. N4 4.95
Gary Ind. R2 4.95
GreenBay Wis. F7 4.95
Hammond Ind. I-2 M13 4.95
Hartford Conn. R2 4.95
Los Angeles B2 4.95
Mansfield Mass. B5 4.95
Massillon O. R2 R8 4.95
Monaca Pa. S17 4.95
Newark N.J. W8 4.95
Plymouth Mich. P6 4.95
Pittsburgh J5 4.95
Putnam Conn. W8 4.95
Readville Mass. C11 4.95
St Louis Mo. M5 4.95
So.Chicago Ill. W11 4.95
Spring City Pa. K3 4.95
Struthers O. Y1 4.95
Waukegan Ill. A7 4.95
Youngstown Y1 4.95
Youngstown R3 4.95

BARS, Cold-Finished Alloy
Ambridge Pa. W8 6.00
BeaverFalls Pa. M12 6.00
Bethlehem Pa. B2 6.00
Buffalo B5 6.00
Camden N.J. P11 6.00
Canton O. R2 6.00
Canton O. T2 6.00
Carnegie Pa. C12 6.00
Chicago B4 6.00
Chicago W8 6.00
Cleveland A7 6.00
Cleveland C20 6.00
Detroit P17 R7 6.10
Donora Pa. A7 6.00
Elyria O. W8 6.00
Gary Ind. R2 6.00
Hammond Ind. I-2 M13 6.00
Hartford Conn. R2 6.00
Lackawanna N.Y. B2 6.00
Mansfield Mass. B5 6.00
Massillon O. R2 R8 6.00
Midland Pa. C18 6.00
Monaca Pa. S17 6.00
Newark N.J. W8 6.00
Plymouth Mich. P6 6.20
So.Chicago Ill. R2 W11 6.00
Spring City Pa. K3 6.20
Struthers O. Y1 6.00
Warren O. C17 6.00
Waukegan Ill. A7 6.00
Worcester Mass. A7 6.35
Youngstown Y1 6.00
Youngstown R3 6.00

BARS, Reinforcing (Fabricators)
Alabama City Ala. R2 3.95¢
Atlanta A11 4.50
Buffalo R2 3.95
Cleveland R2 3.95
Emeryville Calif. J7 4.70
Fairfield Ala. T2 3.95
Fontana Calif. K1 4.65
Gary Ind. U5 3.95
Houston S6 4.35
Ind Harbor Ind. I-2 Y1 3.95
Johnstown Pa. B2 3.95
Kansas City Mo. S6 4.55
Lackawanna N.Y. B2 3.95
Los Angeles B3 4.65
Milton Pa. B6 4.65
Minnequa Colo. C10 4.10
Niles Calif. P1 4.65
Pittsburg Calif. C11 4.65
Pittsburgh J5 3.95
SaltSpringsOnon. S6 4.35
Seattle B2, N14 4.20
So.Chicago Ill. R2 3.95
So.Duquesne Pa. U5 3.95
So.SanFrancisco B3 4.20
SparrowsPoint Md. B2 3.95
Sterling Ill. C11 N15 4.55
Struthers O. Y1 3.95
Torrance Calif. C11 4.65
Williamsport Pa. S19 4.35
Youngstown R2 U5 3.95

RAIL STEEL BARS
Chicago Hts. c34 C2 4.00
Chicago Hts. c34 I-2 4.20
Franklin Pa. c34 P5 4.00
Fort Worth, Tex. c26 T4 4.10
Huntington W.Va. c34 W7 4.45
Marion O. c34 P18 4.45
Moline Ill. c34 R2 4.65
Tonawanda N.Y. B12 4.00
Williamsport Pa. S19 4.25
Williamsport Pa. S19 4.35

BARS, Wrought Iron
Add 4.2¢ to base and extras
Economy Pa. B8 B11 9.60
Economy Pa. c10 B11 B11 11.90
Economy (Starbuck) B11 12.20
Mck. Rks. (Starbuck) Pa. 11.40
Mck. Rks. (S.R.I.) Pa. 9.60
Mck. Rks. (D.R.I.) Pa. 11.00

SHEETS, Hot Rolled Steel
(18 gage and heavier)
Alabama City Ala. R2 3.25¢
Ashland Ky. c30 A10 3.25
Butler Pa. A10 3.25
Cleveland J2 R2 3.25
Conshohocken Pa. A3 4.15
Detroit M1 4.40
Ecorse Mich. G5 3.50
Fairfield Ala. T2 3.25
Fontana Calif. K1 4.25
Gary Ind. U5 3.25
Geneva Utah C11 3.50
Granite City Ill. G4 4.30
Ind Harbor Ind. I-2 Y1 3.25
Irvin Pa. U5 3.25
Lackawanna N.Y. B2 3.25
Munhall Pa. U5 3.25
Niles c6 N12 3.85
Pittsburg Calif. C11 4.75
Pittsburgh J5 3.25
Sharon Pa. S3 4.15
So.Chicago Ill. W11 3.25
Sparrows Point Md. B2 3.25
Steubenville O. W10 3.25
Torrance Calif. C11 4.85
Warren O. R2 3.25
Weirton W.Va. W6 3.25
Youngstown U5 3.25

SHEETS, H.R. (19 gage)
Alabama City Ala. R2 4.95¢
Dover O. R5 4.95
Mansfield O. E6 4.95
Niles O. N12 4.95
Torrance Calif. C11 4.95

SHEETS, H.R. (14 ga. heaviest) High-Strength Low-Alloy
Cleveland J2 R2 5.65¢
Conshohocken Pa. A3 5.95¢
Ecorse Mich. G5 6.25¢
Fairfield Ala. T2 5.65¢
Fontana Calif. K1 5.65¢
Gary Ind. U5 5.65¢
Ind Harbor Ind. I-2 5.65¢
Ind Harbor Ind. Y1 6.15¢
Irvin Pa. U5 5.65¢
Lackawanna c5 B2 5.65¢
Munhall U5 5.65¢
Pittsburgh J5 5.65¢
Sharon Pa. S3 5.65¢
So.Chicago Ill. U5 5.65¢
Sparrows Point Md. B2 5.65¢
Warren O. R2 5.65¢
Weirton W.Va. W6 5.65¢
Youngstown U5 5.65¢
Youngstown Y1 6.15¢

SHEETS, Cold Rolled High Strength Low Alloy
Cleveland J2 R2 5.95¢
Ecorse Mich. G5 6.45¢
Fontana Calif. K1 5.95¢
Gary Ind. U5 5.95¢
Indiana Harbor Ind. Y1 6.45¢
Indiana Harbor Ind. I-2 5.95¢
Irvin Pa. U5 5.95¢
Lackawanna J2 B2 5.95¢
Pittsburgh J5 5.95¢
Sparrows Point Md. B2 5.95¢
Warren O. R2 5.95¢
Weirton W.Va. W6 5.95¢
Youngstown U5 5.95¢
Youngstown Y1 6.45¢

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.35c
Cleveland,O. R2	4.35c
Coatesville,Pa. L2	4.35c
Conshohocken,Pa. A3	4.35c
Detroit,Mich. M1	4.35c
Dover,O. C6	4.35c
Farrell,Pa. S4	4.35c
Fontana,Calif. K1	4.35c
Gary,Ind. U5	4.35c
Granite City,Ill. G4	4.35c
Harrison,N.J. C15	4.35c
Indiana Harbor,Ind. I-2	4.35c
Irvin,Pa. U5	4.35c
Kokomo,Ind. C10	4.35c
Middletown,O. A10	4.35c
Monessen,Pa. P7	4.35c
Newark,N.J. W14	4.35c
Niles,O. N12	4.35c
Pittsburg,Calif. C11	4.35c
Pittsburgh,Pa. J5	4.35c
Portsmouth,O. P13	4.35c
Riverdale,Ill. A7	4.35c
Sharon,Pa. S3	4.35c
Sparrows Point,Md. B2	4.35c
Steubenville,O. W10	4.35c
Warren,O. R2	4.35c
Weirton,W.Va. W6	4.35c
Youngstown,O. Y1	4.35c

SHEETS, Galv'd No. 10 Steel

Alabama City,Ala. R2	5.60c
Ashland,Ky.(3) A10	5.60c
Canton,O. R2	5.60c
Delphos,O. N15	5.60c
Dover,O. R1	5.60c
Fairfield,Ala. T2	5.60c
Gary,Ind. U5	5.60c
Granite City,Ill. G4	5.60c
Ind Harbor,Ind. I-2	5.60c
Irvin,Pa. U5	5.60c
Kokomo,Ind.(13) C10	5.45c
Martins Ferry,O. W10	5.60c
Niles,O. N12	6.25c
Pittsburg,Calif. C11	5.75c
Sparrows Point,Md. B2	5.60c
Steubenville,O. W10	5.60c
Terrance,Calif. C11	5.75c
Weirton,W.Va. W6	5.60c

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5	7.65c
Sparrows Point,Md. B2	7.65c

SHEETS, Galvannealed Steel

Canton,O. R2	5.65c
Irvin,Pa. U5	5.65c
Kokomo,Ind.(13) C10	5.65c
Niles,O. N12	6.25c

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.35c
Middletown,O. A10	5.42c

SHEETS, Electro Galvanized

Cleveland,R2 (2)(5)	5.65c
Niles,O. R2 (2)(5)	5.65c
Weirton,W.Va. W6	5.75c

SHEETS, Well Casing

Fontana,Calif. K1 (3)	5.10
Torrance,Calif. C11	5.25c

BLUED Stock, 29 ga.

Yorkville,O. W10	7.00
Follansbee,W.Va. F1	7.10
Follansbee (2)(5) F1	6.45c

SHEETS, Enameling Iron

Ashland,Ky.(3) A10	4.95c
Cleveland,O. R2	4.95c
Gary,Ind. U5	4.95c
Granite City,Ill. G4	5.65c
Ind Harbor,Ind. I-2	4.95c
Irvin,Pa. U5	4.95c
Middletown,O. A10	4.95c
Youngstown,O. Y1	4.95c

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.25
Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.50
Granite City,Ill. G4	6.70
Ind Harbor,Ind. I-2, Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.60
Pittsburg,Calif. C11	7.25
Sparrows Point,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F1	6.10
Gary,Ind. U5	6.10
Granite City,Ill. G4	6.30
Ind Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.30

SHEETS, Culvert No. 16

	Cu	Cu
	Alloy	Fe
Ashland,Ky. A10	5.85c	
Canton,O. R2	5.85c	6.35c
Fairfield,Ala. T2	5.85c	6.35c
Gary,Ind. U5	5.85c	6.35c
Ind Harbor,Ind. I-2	5.85c	6.35c
Irvin,Pa. U5	5.85c	6.35c
Kokomo,Ind. C10	6.65c	
Martin's Ferry,O. W10	5.85c	
Sparrows Pt.,Md. B2	5.85c	
Torrance,Cal. C11	6.65c	

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10	6.15c
Fairfield,Ala. T2	6.15c
Martins Ferry,O. W10	6.15c

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(3) A10	4.05c
Cleveland,O. R2	4.35c
Ind Harbor,Ind. I-2	4.05c
Warren,O. R2	4.35c

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10	6.05c
Cleveland,O. R2	6.15c
Middletown,O. A10	6.05c
Warren,O. R2	6.15c

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(3) A10	5.35c
Canton,O. R2	5.65c

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.60c
Middletown,O. A10	5.60c

SHEETS, ALUMINIZED

Butler,Pa. A10	8.45c

TIN PLATE, American 1.25 Lb Coke (Base Box)

	1.50 lb	1.75 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Gary,Ind. U5	8.70	8.95
Granite City,Ill. G4	8.70	8.95
Ind Harbor,Ind. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Niles,O. R2	8.70	8.95
Pittsburg,Calif. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10	$8.65

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	$8.75
Yorkville,O. W10	8.75

SHEETS, Long Terne Steel (Commercial Quality)

Beech Bottom,W.Va. W10	8.45c
Gary,Ind. U5	8.45c
Mansfield,O. E6	8.60
Middletown,O. A10	8.45c
Niles,O. N12	8.25c
Weirton,W.Va. W6	8.45c

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	8.85c

ROOFING SHORT TERNES (8 lb. Coated)

Gary,Ind. U5	9.75

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	5.65c
Conshohocken,Pa. A3	5.50c
Coatesville,Pa. L2	5.50c
Fairfield,Ala. T2	5.65c
Fontana,Calif. K1	5.65c
Gary,Ind. U5	5.65c
Ind Harb.,Ind. I-2	5.65c
Ind Harbor,Ind. Y1	5.65c
Lackawanna,N.Y. B2	5.50c
Los Angeles(2)(5) B3	6.40c
Seattle(2)(5) B3	6.60c
Sharon,Pa. S3	5.65c
So.San Francisco(2)(5) B3	6.40c
Sparrows Point,Md. B2	5.50c
Warren,O. R2	5.65c
Weirton,W.Va. W6	6.10c
Youngstown,O. Y1	6.15c
Youngstown,O. U5	5.65c

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland,O. R2	4.45c
Cleveland,O. A7	4.30c
Dover,O. C6	4.00c
Ecorse,Mich. G3	4.35c
Lackawanna,N.Y. B2	4.00c
Sharon,Pa. S3	4.30c
Sparrows Point,Md. B2	4.30c
Warren,O. R2	4.30c
Weirton,W.Va. W6	4.00c
Youngstown,O. Y1	4.30c

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.75c
Alton,Ill. L1	4.20c
Ashland,Ky.(3) A10	3.75c
Atlanta,Ill. A11	4.25c
Bessemer,Ala. T2	3.75c
Bridgeport,Conn.(10) SL5	4.25c
Buffalo(27) R2	3.75c
Butler,Pa. A10	3.75c
Carnegie,Pa. S15	4.25c
Conshohocken,Pa. A3	4.15c
Detroit,Mich. M1	4.10
Ecorse,Mich. G3	4.05c
Fairfield,Ala. T2	3.75c
Fontana,Calif. K1	4.95c
Gary,Ind. U5	3.75c
Houston,Tex. S6	4.15c
Ind Harbor,Ind. I-2,Y1	3.75c
Johnstown,Pa.(25) B2	3.75c
Kansas City,Mo.(5) S6	4.35c
Lackawanna,N.Y.(32) B2	3.75c
Los Angeles(2)(5) B3	4.45c
Milton,Pa. B6	4.35c
Minnequa,Colo. C10	4.75c
New Britain(10) SL5	4.25c
N.Tonawanda,N.Y. B11	3.75c
Pittsburg,Calif. C11	4.45c
Riverdale,Ill. A7	3.75c
San Francisco,S7	5.00
Seattle(2)(5) B3	4.75c
Seattle,N14	4.75c
Sharon,Pa. S3	4.25c
So.Chicago,Ill. W11	3.75c
So.San Francisco(2)(5) B3	4.45c
Sparrows Point,Md. B2	3.75c
Sterling,Ill. N15	4.75c
Torrance,Calif. C11	4.45c
Warren,O. R2	3.75c
Weirton,W.Va. W6	3.85c
West Leechburg,Pa. A4	3.95c
Youngstown,O. Y1	3.75c

STRIP, Hot-Rolled Alloy

Bridgeport,Conn.(10) SL5	6.05c
Carnegie,Pa. S15	6.45c
Fontana,Calif. K1	7.30c
Gary,Ind. U5	6.10c
Houston,Tex. S6	6.50c
Kansas City,Mo. S5	6.70c
Midland,Pa. C15	6.85c
New Britn.Conn.(10) SL5	6.05c
Sharon,Pa. S3	6.45c
Youngstown,O. U5	6.10c

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.00c
Bridgeport,Conn.(10) SL5	5.00c
Butler,Pa. A10	5.10c
Cleveland,O. A7	5.10c
Dearborn,Mich. D3	5.00c
Detroit,Mich. D2	5.00c
Detroit,Mich. M1	5.15c
Dover,O.(40) G6	5.00c
Ecorse,Mich. G3	5.00c
Follansbee,W.Va. F1	5.10c
Fontana,Calif. K1	6.25c
Franklin Park,Ill.(40) T6	5.15c
Harrison,N.J. C15	5.00c
Mattapan,Mass. T6	5.15c
New Britn.Conn.(10) SL5	5.00c
New Castle,Pa. B4	5.00c
New Castle,Pa. B4	5.00c
New Haven,Conn. D2	5.00c
New York,W3	5.25c
Pawtucket,R.I. N8	
Cleveland/Pitts.Base	5.00c
Worcester,Mass. Base	5.00c
Riverdale,Ill. A7	5.00c
Sharon,Pa. S3	5.00c
Trenton,N.J. R6	5.00c
Wallingford,Conn. W2	5.00c
Warren,O. T6	5.00c
Weirton,W.Va. W6	5.00c
Worcester,Mass. A7	5.00c
Worcester,Mass. T6	5.00c
Youngstown,O. S8	5.00c

Spring Steel (Tempered)

Trenton,N.J. R6 (2)(5)	10.50c
Harrison,N.J. C15	10.50c
New York,W3	10.50c
Youngstown,O. S8	10.50c

STRIP, Cold-Finished, Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1		7.65c	8.25c	10.50	
Carnegie,Pa. S15	7.50c	7.65c	8.25c	10.20	12.50
Cleveland,O. A7	7.30c	7.30c	8.25c	10.20	12.50
Dearborn,Mich. D3	6.05c	7.00c	8.00		
Detroit,Mich. D2	6.15c	7.00c	8.00		
Dover,O. C6	7.20c	7.65c	8.25c	10.20	12.50
Franklin Park,Ill. T6	7.45c	7.45c	8.45c	10.35c	12.65c
Harrison,N.J. C15			8.00c	10.50c	12.50
Mattapan,Mass. T6	7.95c	7.60c	8.50c	10.50c	12.50
New Britn.Conn.(10) SL5	7.50c	7.65c	8.25c	10.20	12.50
New Castle,Pa. B4	7.50c	7.65c	8.25c	10.20	
New Castle,Pa. B4	7.50c	7.65c	8.25c	10.20	12.50
New Haven,Conn. D2	7.20c	7.60c	8.20c		
New York,W3		7.95c	8.50c	10.50c	12.50
Pawtucket,R.I. N8					
Cleve.or Pitts.Base		7.65c	8.25c	10.20	12.50
Worcester,Mass. Base	8.30c	7.95c	8.50c	10.50c	12.50
Riverdale,Ill. A7	7.50c	7.65c	8.25c	10.20	12.50
Sharon,Pa. S3		7.65c	8.25c	10.20	12.50
Trenton,N.J. R6		7.95c	8.50c	10.50c	12.50
Wallingford,Conn. W2	6.30c	7.60c	8.20c	10.15c	12.65c
Warren,O. T6	6.20c	7.60c	8.25c	10.20	12.50
Weirton,W.Va. W6	6.80c	7.60c	8.25c	10.20	12.50
Worcester,Mass. A7	5.40c	7.60c	8.25c	10.50c	12.50
Worcester,Mass. T6	5.95c	7.60c	8.25c	10.50c	12.50
Youngstown,O. S8		7.65c	8.25c	10.20	12.50

STRIP, Hot-Rolled Alloy

Bridgeport,Conn.(10) SL5	12.15
Carnegie,Pa. S15	12.00
Cleveland,O. A7	11.80
Dover,O. C6	11.90
Fontana,Calif. K1	13.65
Harrison,N.J. C15	12.00
Midland,Pa. C15	12.00
New Britn.Conn.(10) SL5	12.15
Pawtucket,R.I.(11) N8	12.15
Pawtucket,R.I.(12) N8	12.45
Sharon,Pa. S3	12.00
Worcester,Mass. A7	11.70
Youngstown,O. S8	12.00

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(3) A10	3.95c
Warren,O. R2	4.35c

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.70c

TIGHT COOPERAGE HOOP

Atlanta,Ill. A11	4.15c
Riverdale,Ill. A1	4.50c
Sharon,Pa. S3	4.35c
Youngstown,O. U5	4.15c

STRIP, Electro Galvanized

Dover,O. C6	5.50c
Warren,O. T2	5.70c
Weirton,W.Va. W6	5.10c
Youngstown,O. S8	5.70c

STRIP, Cold-Rolled Alloy Steel

Bridgeport,Conn.(10) SL5	12.15
Carnegie,Pa. S15	12.00
Cleveland,O. A7	11.80
Dover,O. C6	11.90
Fontana,Calif. K1	13.65
Harrison,N.J. C15	12.00
Midland,Pa. C15	12.00
New Britn.Conn.(10) SL5	12.15
Pawtucket,R.I.(11) N8	12.15
Pawtucket,R.I.(12) N8	12.45
Sharon,Pa. S3	12.00
Worcester,Mass. A7	11.70
Youngstown,O. S8	12.00

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(3) A10	3.95c
Warren,O. R2	4.35c

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.70c

TIGHT COOPERAGE HOOP

Atlanta,Ill. A11	4.15c
Riverdale,Ill. A1	4.50c
Sharon,Pa. S3	4.35c
Youngstown,O. U5	4.15c

SHEETS, SILICON, H.R. or C.R (22 Ga.) COILS (Cut lengths 1/2c lower)

	Field	Armature	Electric	Motor	Dynamo
Beech Bottom,W10 (cut lengths)			7.85	9.10	9.90
Brackenridge,Pa. A4			8.35	9.60	10.40
Granite City,Ill. G4 (cut lengths)			8.55	9.80	
Indiana Harbor,Ind. I-2	7.55	7.85	(31)	(31)	
Mansfield,O. E6 (cut lengths)	7.20	7.55	7.85	9.10	9.90
Niles,O. N12 (cut lengths)	7.05	7.35	7.65		
Vandergrift,Pa. U5		7.85	8.35	9.60	10.40
Warren,O. R2	7.55	7.85	8.35	9.60	10.40
Zanesville,O. A10		7.85	8.35	9.60	10.40

SHEETS, SILICON (22 Ga. Base) COILS (Cut Length 1/2c lower)

Transformer Grade	72	65	58	52
Beech Bottom,W10 (cut lengths)	10.45	11.00	11.70	12.50
Brackenridge,Pa. A4	10.95			
Vandergrift,Pa. U5	10.95	11.50	12.20	13.00
Warren,O. R2	10.95			
Zanesville,O. A10	10.95	11.50	12.20	13.00

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)			15.35	15.85
Vandergrift,Pa. U5	13.50	14.35	15.35	15.85

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Bolardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div. H. K. Porter Co.
B14 A. M. Byers Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Corp.
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Inc.
F5 Fitzsimons Steel Co.
F6 Follansbee Steel Corp.
F9 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
I-1 Ideal Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J2 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
AlabamaCity R2	6.07½	6.32½
Aliquippa Jo	6.07½	6.32½
Atlanta AH	6.32½	6.67½
Bartonville IpsKH	6.07½	6.40
Buffalo W12	5.22½	
Cleveland A7	6.07½	6.22½
CrawfordsvilleMs	6.17½	6.50
Donora Pa A7	6.07½	6.22½
Duluth Minn A7	6.07½	6.22½
Fairfield T2	6.07½	6.22½
Houston Tex S8	6.47½	6.62½
Johnstown R2	6.07½	6.45
Joliet Ill A7	6.07½	6.22½
KansasCity Mo S8	6.07½	6.32½
Kokomo C16	6.17½	6.42½
LosAngeles B3	7.02½	
Minnequa C10	6.32½	6.70*
Monessen P7	6.07½	6.45
Palmer W12	5.52½	
Pitts Calif C11	7.02½	7.17½
Pittsmth OsiP12	6.17½	
Rankin A7	6.07½	6.22½
So Chicago R2	6.07½	6.32½
So S Fran C10	7.02½	7.40*
SparrowsPt R2	6.17½	6.50
Sterling Ill C1	N13 6.07½	6.40
Struthers O Y1	6.07½	6.42½
Torrance Cal C11	7.02½	
Worcester A7	6.32½	6.62½

*Based on 16c zinc; $14.50c zinc, 17.5c zinc.

WIRE (16 gage)	Anl'd. Stone	Galv. Stone
(Add 4.7½ on base and extras)		
Aliquippa Jo	10.15	12.15
Bartonville IpsK	10.25	12.00*
Cleveland A7	10.25	11.55
Crawfordsville Ms	10.73	12.51
Fostoria O S1	10.40	12.00
Johnstown R2	10.73	12.58‡
Kokomo C16	10.625	12.325‡
Minnequa C10	10.10	12.42*
Palmer Mass W12	10.25	12.15
Pitts Cal C11	10.60	11.90
SparrowsPt R2	10.81	12.68‡
Waukegan A7	10.25	11.55
Worcester A7		11.85

*Based on 16c zinc; $14.50c zinc. ‡Includes 4.7½ increase.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	5.22½
Aliquippa,Pa. Jo	4.42½
Atlanta AH	4.47½
Alton,Ill. L1	4.47½
Bartonville,Ill. K1	4.32½
Buffalo W12	4.22½
Chicago W13	4.47½
Cleveland A7, C20	4.22½
Crawfordsville,Ind. Ms	4.52½
Donora,Pa. A7	4.22½
Duluth,Minn. A7	4.22½
Fairfield,Ala. T2	4.22½
Fostoria,O. C24, S1	4.72½
Houston,Tex. S4	4.62½
Johnstown,Pa. B2	4.22½
Joliet,Ill. A7	4.22½
KansasCity,Mo. S4	4.52½
Kokomo,Ind. C16	4.32½
LosAngeles,Cal. B3	6.17½
Minnequa,Colo. C10	4.47½
Monessen,Pa. P7	4.47½
Newark 6-8 ga. I-1	4.88
NoTonawanda,N.Y. B11	4.22½
Palmer,Mass. W12	4.52½
Pittsburg,Calif. C11	6.17½
Portsmouth,O. P12	4.62½
Rankin,Pa. A7	4.22½
So.Chicago,Ill. R2	4.22½
So.SanFrancisco,Calif. C10	6.17½
SparrowsPoint,Md. B2	4.32½
Sterling,Ill.(1) N13	4.22½
Struthers,O. Y1	4.22½
Torrance,Calif. C11	6.17½
Worcester,Mass. A7	4.52½

WIRE, Cold-Rolled Flat

Anderson,Ind. Gu	6.20
Buffalo W12 (4)	6.50
Cleveland A7 (4)	6.85
Crawfordsville,Ind. Ms (4)	6.85
Fostoria,O. S1 (4)	6.00
Kokomo,Ind. C16 (4)	6.20
FranklinPark,Ill. T6 (4)	6.20
Massillon,O. R5 (4)	6.35
Monessen,Pa. P16 (4)	6.35
Monessen,Pa. P7 (4)	6.10
Pawtkt,R.I. (12) Nx (4)	6.85
Trenton,N.J. R5 (4)	6.15
Worcester,Mass. A7 (4)	6.15
Worcester,Mass. T6 (4)	6.50
Worcester,Mass.W12 (4)	6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K1	8.90
Monessen,Pa. P16 (4)	8.50
Muncie,Ind. I-7 (4)	8.70
Roebling,N.J. R5 (4)	8.80
SparrowsPt. Md. B2 (4)	8.60
Johnstown,Pa. B2 (4)	8.50

ROPE WIRE

Alton,Ill. L1	9.15
Bartonville,Ill. K1	8.95
Buffalo W12 (4)	8.85
Fostoria,O. S1 (4)	8.80
Johnstown,Pa. B2 (4)	8.55
Monessen,Pa. P16 (4)	8.50
Monessen,Pa. P7 (4)	8.80
Muncie,Ind. I-7 (4)	8.70
Palmer,Mass. W12 (4)	8.85
Portsmouth,O. P12 (4)	8.80
Roebling,N.J. R5 (4)	8.80
SparrowsPt. B2 (4)	8.60
Struthers,O. Y1 (4)	8.80
Worcester,Mass. T6 (4)	8.80

(4) Plow and Mod. Plow, add 0.25c for improved plow.

WIRE, MB Spring, High Carbon

Aliquippa,Pa. Jo (4)	6.25
Alton,Ill. L1	6.25
Bartonville,Ill. K1	6.60
Buffalo W12 (4)	6.25
Cleveland A7 (4)	6.25
Donora,Pa. A7 (4)	6.25
Duluth,Minn. A7 (4)	6.25
Fostoria,O. S1 (4)	6.25
Johnstown,Pa. B2 (4)	6.25
Millbury (12) N6 (4)	8.05
Minnequa,Colo. C10 (4)	6.50
Monessen,Pa. P7 (4)	6.25
Monessen,Pa. P16	6.25
Muncie,Ind. I-7 (4)	6.45
Palmer,Mass. W12 (4)	6.50
Pittsburg,Calif. C11 (4)	7.20
Roebling,N.J. R5 (4)	6.50
Portsmouth,O. P12 (4)	6.25
So.Chicago,Ill. R2 (4)	6.25
So.SanFran. C10 (4)	7.20
SparrowsPt. Md. B2 (4)	6.35
Struthers,O. Y1 (4)	6.25
Trenton,N.J. A7 (4)	6.60
Waukegan,Ill. A7 (4)	6.25
Worcester,Mass. A7	6.50
Worcester,Mass. W12 (4)	6.65
Worcester,Mass. T6 (4)	6.75

WIRE, Upholstery Spring

Aliquippa,Pa. Jo	6.25‡
Alton,Ill. L1	6.60
Buffalo W12	6.25‡
Cleveland A7	6.25‡
Donora,Pa. A7	6.25‡
Duluth,Minn. A7	6.25‡
Johnstown,Pa. B2	6.25‡
LosAngeles B3	7.22½
Minnequa,Colo. C10	6.32½
Monessen,Pa. P7	6.25‡
NewHaven,Conn. A7	6.57½
Palmer,Mass. W12	6.57½
Pittsburg,Calif. C11	7.22½
Portsmouth,O. P12	6.27½
Roebling,N.J. R5	6.57½
So.Chicago,Ill. R2	6.27½
So.SanFrancisco C10	7.22½
SparrowsPoint,Md. B2	6.32½
Torrance,Calif. C11	7.22½
Trenton,N.J. A7	6.57½
Waukegan,Ill. A7	6.27½
Worcester,Mass. A7	6.57½

WIRE, Fine & Weaving (8 Coils)

Bartonville,Ill. K1	9.42
Buffalo W12 (4)	8.90
Chicago W13	9.32
Cleveland A7 (4)	8.90
Crawfordsville,Ind. Ms (4)	8.90
Fostoria,O. S1 (4)	8.90
Johnstown,Pa. B2 (4)	8.90
Kokomo,Ind. C16 (4)	8.90
Monessen,Pa. P16 (4)	8.90
Muncie,Ind. I-7 (4)	9.10
Palmer,Mass. W12 (4)	8.90
Roebling,N.J. R5 (4)	8.90
Waukegan,Ill. A7 (4)	8.90
Worcester,Mass. A7 To (4)	9.20

WIRE, Tire Bead

Bartonville,Ill. K1	11.51
Monessen,Pa. P16 (4)	11.10
Roebling,N.J. R5 (4)	11.40

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala. R2	134
Ala City,Ala. 17-19½ R2	222
Aliquippa,Pa. 9-11½ ga. Jo	130‡
Atlanta AH	149
Bartonville,Ill. K1	132
Chicago,Ill. W13	122
Cleveland A9 (4)	125
Crawfordsville,Ind. Ms	130
Donora,Pa. A7	127
Duluth,Minn. A7	127
Fairfield,Ala. T2	127
Galveston,Tex. D7	133
Houston,Tex. S6 (4)	126
Johnstown,Pa. B2	127
Joliet,Ill. A7	127
KansasCity,Mo. S6 (4)	130
Kokomo,Ind. C16	129
Minnequa,Colo. C10 (4)	123
Monessen,Pa. P7	127
Pittsburg,Calif. C11	146
Portsmouth,O. P12	132
Rankin,Pa. A7	127
Joliet,Ill. A7	142
KansasCity,Mo. S6	134
Kokomo,Ind. C16	140
Minnequa,Colo. C10	153*
Monessen,Pa. P7	147
Pittsburg,Calif. C11	162
Rankin,Pa. A7	142
So.Chicago,Ill. R2	144
So.SanFran., Calif. C10	162*
SparrowsPoint,Md. B2	149
Sterling,Ill.(1) N13	146

*Based on 16c zinc; 17.5c zinc.

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	132
Atlanta AH	133
Bartonville,Ill. (2) K1	132
Crawfordsville,Ind. Ms	134
Donora,Pa. A7	132
Duluth,Minn. A7	132
Fairfield,Ala. T2	132
Joliet,Ill. A7	132
KansasCity,Mo. S6	144
Kokomo,Ind. C16	138
Minnequa,Colo. C10	137
Pittsburg,Calif. C11	156
So.Chicago,Ill. R2	132
So.SanFran.,Calif. C10	156
SparrowsPoint,Md. B2	138
Sterling,Ill.(1) N13	132

TRACK BOLTS (20) Treated

KansasCity,Mo. S6	9.85
Lebanon,Pa. (3) B2	9.85
Minnequa,Colo. C10	9.85
Pittsburgh (6), P11	9.85

AXLES

2nd Harbor,Ind. S13	5.65
Johnstown,Pa. B2	5.60

NAILS, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	127
Aliquippa,Pa. Jo	127
Atlanta AH	130
Bartonville,Ill. (2) K1	127
Chicago,Ill. W13	122
Cleveland A9 (4)	125
Crawfordsville,Ind. Ms	130
Donora,Pa. A7	127
Duluth,Minn. A7	127
Fairfield,Ala. T2	127
Galveston,Tex. D7	133
Houston,Tex. S6 (4)	126
Johnstown,Pa. B2	127
Joliet,Ill. A7	127
KansasCity,Mo. S6 (4)	130
Kokomo,Ind. C16	129
Minnequa,Colo. C10 (4)	123
Monessen,Pa. P7	127
Pittsburg,Calif. C11	146
Portsmouth,O. P12	132
Rankin,Pa. A7	127
So.Chicago,Ill. R2	127
Sparrows Pt. Md. B2	129
Sterling,Ill.(1) N13	127
Torrance,Calif. C11	147
Worcester,Mass. A7	133

STAPLES, Polished, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	126
Aliquippa,Pa. P5	126
Atlanta AH	129
Bartonville,Ill. (2) K1	126
Chicago W13	127
Crawfordsville,Ind. Ms	128
Donora,Pa. A7	126
Duluth,Minn. A7	126
Fairfield,Ala. T2	126
Johnstown,Pa. B2	126
Joliet,Ill. A7	126
Kokomo,Ind. C16	128
Minnequa,Colo. C10 (4)	123
Monessen,Pa. P7	127
Pittsburg,Calif. C11	146
Portsmouth,O. P12	132
Sparrows Pt. Md. B2	128
Sterling,Ill.(1) N13	126
Torrance,Calif. C11	146
Worcester,Mass. A7	132

NAILS, Cut (100 lb keg)

To dealers (33)	
Conshohocken,Pa. A7	$7.80
Wheeling,W.Va. Wh	7.80

TIE PLATES

Fairfield,Ala. T2	4.77½
Gary,Ind. Us	4.77½
Ind Harbor,Ind. I-2	4.77½
Ind Harbor,Ind. I-2	4.77½
Lackawanna,N.Y. B2	4.77½
Minnequa,Colo. C10	$50.50*
Pittsburg,Calif. C11	4.92½
Seattle B3	4.92½
Steelton,Pa. B2	4.77½
Torrance,Calif. C11	4.92½

*Per net ton

JOINT BARS

Bessemer,Pa. Us	4.92½
Fairfield,Ala. T2	4.92½
Ind Harbor,Ind. I-2	4.92½
Joliet,Ill. Us	4.92½
Lackawanna,N.Y. B2	4.92½
Minnequa,Colo. C10	4.92½
Steelton,Pa. B2	4.92½

STANDARD TRACK SPIKES

Ind Harbor,Ind. I-2, Yl	6.65
KansasCity,Mo. Se	6.90
Lebanon,Pa. B2	6.65
Minnequa,Colo. C10	6.65
Pittsburgh,Pa.	6.65
Seattle B3	7.15
So.Chicago,Ill. R2	6.65
Struthers,O. Y1	6.65
Youngstown R2	6.65

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	Tee Rails 60 lb. Under
Bessemer,Pa. Us	3.72½	3.92½	3.72½	4.25
Ensley,Ala. T2	3.72½	3.92½		4.25
Fairfield,Ala. T2				4.25
Gary,Ind. Us	3.72½	3.92½	3.72½	
Huntington,W.Va. W7				5.25
IndianaHarbor,Ind. I-2	3.72½	3.92½	3.72½	
Johnstown,Pa. B2				(16)4.25
Lackawanna,N.Y. B2	3.72½	3.92½		4.25
Minnequa,Colo. C10	$75.50*	$73.50*		4.25
Steelton,Pa. B2	3.72½	3.92½		
Williamsport,Pa. SP				5.00

*Per net ton

TOOL STEEL

(Prices subject to 4.7½ increase)

Grade	$ per lb
Regular Carbon	0.255
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
Low Carbon Hot Work	0.340
High Carbon Cr	0.635

Grade by Analysis

W	Cr	V	Co	
18	4	1		1.565
18	4	2	1 to 1	1.66
20 to 24	4 to 5	1 to 2	5 to 13	3.625
18	4	2	7	2.460
18 to 24	4 to 5	1	4 to 7	2.125
18	4	2	9	2.44 to 2.64
13	4	3		1.6025
9	4 to 4.5	2		1.01

W	Cr	V	Mo	
6	4 to 4.5	1 to 2	4 to 6	0.965
6	4	3	6	1.190
1½	4	1	8½	0.810

Tool steel producers include: A4 As B2 Bs C4 C9 C13 D1 D4 E2 J5 L3 M1, M8, S4 V2 and V5.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) Chicago or Burn. base.
(6) To jobbers, 5 cents less.
(7) 16 gage and heavier.
(8) 6 in. and narrower.
(9) Pittsburgh base.
(10) Cleveland & Pitts. base.
(11) Worcester, Mass. base.
(12) Add 0.5c for 17 Ga. & heavier.
(13) "A" and thinner.
(14) 6c lb and under.
(15) Flats only.
(16) To dealers.
(17) Chicago & Pitts. base.
(20) 0.2c off for untreated.
(21) New Haven Conn. base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. "A" axle.
(24) Jobber 0.2c, Dlvr. than 6c.
(25) Bar mill hands.
(26) Reinforcing, mill lengths, to fabricators; to consumers, 5.80c.
(27) Bar mill steel.
(28) Rerolled.
(29) Add $1.50 per ton.
(30) Sheared, add 0.25c for annealed.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 50c.
(34) 8c for 5" lengths.
(35) 22" and narrower.
(36) 24" and narrower.
(37) 11 gage & lighter 60" & narrower.
(38) 14 gage & lighter 48" & narrower.
(39) 24" and narrower.
(40) Lighter than 9 gage, 0.25" and heavier, 0.2c" higher.
(41) 3 bbl. for cut lengths.
(42) Plus 0.5c per 100 lb.
(43) Plus 4.7½c on base and extras.
(44) Plus 4c per 100 lb.
(45) Plus 8c per 100 lb.

Key to Producers

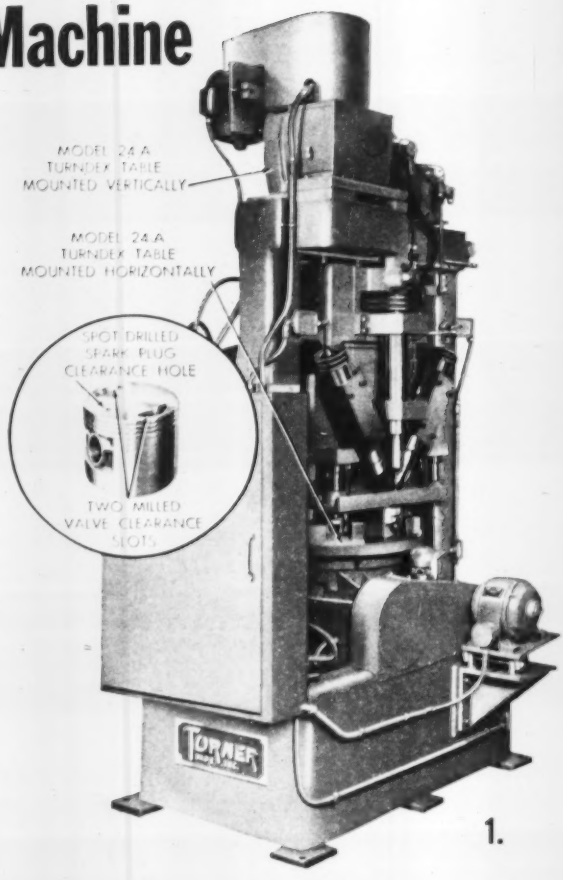
M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
N2 National Supply Co.
N3 National Tube Div.
N4 Nelsen Steel & Wire Co.
N6 NewEng-HighCarb Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Div.
N14 Nrthwst. Steel Roll Mills
N15 Northwestern S&W Co.
N16 New Delphos Mfg. Co.
O1 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P8 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 ReliancePlv., EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sheron Steel Corp.
S4 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sines-Sheffield S&I Div.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seidelhuber Steel
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T8 Tonawanda Iron Div., Am. Rad. & Stan. San.
U4 Universal Cyclops Steel
U5 United States Steel
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West Auto Mach. Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel
W13 Wire Cloth Fuel & Iron
W14 Wilson Steel & Wire Co.
W15 Wisconsin Steel Div., International Harvester
Y1 Youngstown Steel & Tube

Split-second Indexing Machine

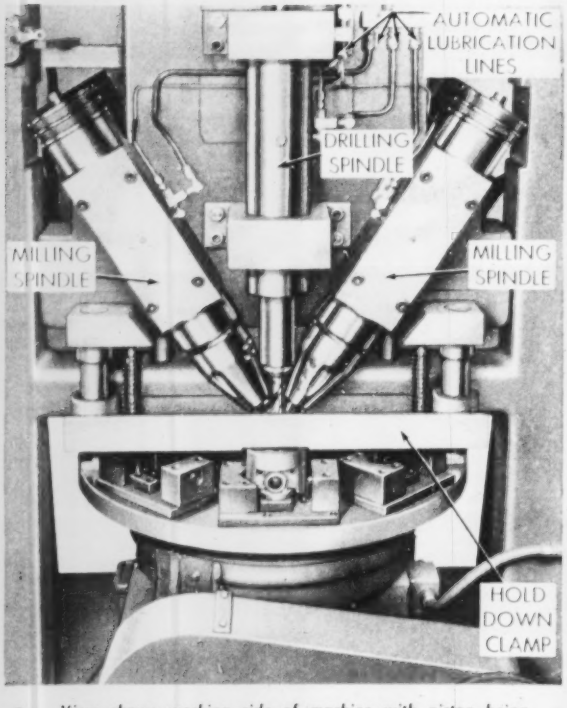
Mills and spot drills 700 pistons per hour

This special piston milling and spot drilling machine was designed and built for one of the large automobile companies by Turner Bros., Inc., Ferndale, Michigan. This machine utilizes two Model 24-A Hautau-Turndex Automatic Indexing Tables. One of these Turndexes is mounted on top of the machine in a vertical position and is used to actuate the slide on which are mounted the milling spindles, drilling spindle and hold down clamp (Picture 2).

This vertically mounted Hautau-Turndex causes the cutting spindles to make a split-second approach to the work, feeds the cutting tools into the work, and when the operation is completed, the heads are rapidly returned by the Hautau-Turndex.


MODEL 24-A TURNDEX TABLE MOUNTED VERTICALLY
MODEL 24-A TURNDEX TABLE MOUNTED HORIZONTALLY
SPOT DRILLED SPARK PLUG CLEARANCE HOLE
TWO MILLED VALVE CLEARANCE SLOTS
TURNER

1.



2. *View shows working side of machine with piston being milled and drilled.*

The horizontally mounted indexing table is located in the base of the machine (Picture 2) and has six spring loaded fixtures for holding the part to be machined.

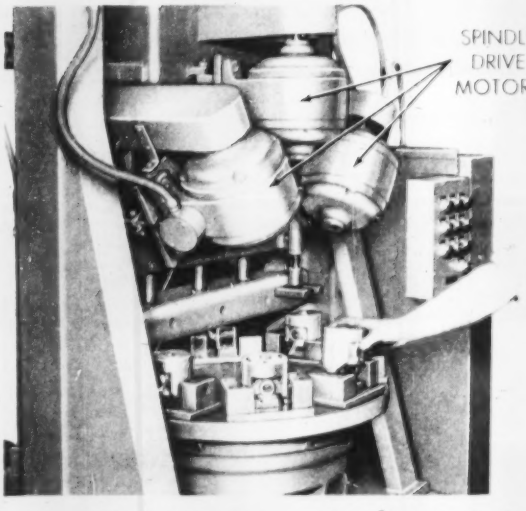
Loading is done on the opposite side of all cutting operations, thereby affording complete safety for the operator (Picture 3). The push button station (Picture 3) allows operator to perform manually each operation separately such as feed actuation, index of fixtures or operation of any work spindle as well as automatic operation.

Another feature of this Turner machine is that, should any failure occur in any operation of the machine, the automatic safety shut-off will stop the machine immediately. Until the error is corrected, the machine cannot be restarted.

The tools for this Turner machine are set with a master piston gage that is hardened and ground to simulate the actual piston. The electrical work is built to J.I.C. Standards, and all drives are separate and all motors and heads are readily accessible for repair or replacement.

This Special Turner Indexing Machine produces 700 parts per hour and production is limited only by the fact that the operator cannot load the pieces any faster.

If you have time consuming machining operations on which you would like to save on manpower, inspection time and floor space, why not write Turner Bros., Inc., 2625 Hilton Road, Ferndale 20, Michigan, describing your problem?



3. *Operator loads machine in complete safety on opposite side of cutting operations.*

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list

Size—Inches	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3
List Per Ft	.30c	.40c	.53c	.67c	.86c	1.12	1.47	1.71	2.26	3.53	4.92
Pounds Per Ft	.24	.42	.57	.85	1.13	1.68	2.28	2.73	3.68	5.82	7.62

	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. Jo-Ca	32 e	14 2e	35 e	18 2e	38	20 7e	38 e	20 e	39	21	39 e	21 e	40	23 2e	40	21 2e
Aliquippa, Pa. J1	29 e	10 e	32 e	14 e	35	18	36 e	18 e	36	19 e	36 e	20	37	20 e	37	20 e
Benwood, W. Va. W10	32 e	14 2e	35 e	17 2e	38	20 7e	38 e	20 e	39	21 e	39 e	22	40	23 2e	40	21 2e
Elba, Pa. N2	32 e	14 2e	35 e	17 2e	38	20 7e	38 e	20 e	39	22 2e	39 e	22	40	23 2e	40	21 2e
Fontana, Calif. K1	21	1 1e	21	3 7e	26 e	9 2e	27	9	27 e	10	28	10 e	28 e	10 2e	28 e	10 2e
Ind. Harbor, Ind. Y1	31 e	14 2e	34 e	18 2e	37	21 7e	37 e	21	38	22	38 e	22 2e	39	21 7e	39	21 7e
Lorain, O. N3	32 e	22 2e	35 e	26 2e	38	29 7e	38 e	27 2e	39	28 2e	39 e	28 7e	40	26 2e	40	26 2e
Sharon, Pa. M6	32 e	14 2e	35 e	18 2e	38	21 7e	38 e	20 e	39	21 e	39 e	21 e	40	20 7e	40	20 7e
Sparrows Pt., Md. B2	30 e	11 2e	33 e	16 2e	36	18 7e	36 e	18 e	37	19 e	37 e	20	38	19 7e	38	19 7e
Youngstown, R2	32 e	14 2e	35 e	18 2e	38	21 7e	38 e	21 2e	39	22 2e	39 e	22 2e	40	22 2e	40	22 2e
Youngstown, Y1	32 e	14 2e	35 e	18 2e	38	22 7e	38 e	22 e	39	23 e	39 e	23 e	40	22 2e	40	22 2e
Wheatland, Pa. W4	32 e	13 2e	35 e	16 2e	38	18 7e	38 e	18	39	18 e	39 e	20	40	20 2e	40	20 2e

SEAMLESS STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	2	2½	3	3½	4	5	6
List Per Ft	.32c	.58 3e	.76 3e	.92c	$1.09	$1.48	$1.92
Pounds Per Ft	3.68	5.82	7.62	9.20	10.89	14.81	19.18

	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. Jo-Ca	24	6	27	8 2e	27	8 2e	29	10 2e	29	10 2e	33 2e	1e	33 2e	1e
Ambridge, Pa. N2	24	6	27	8 2e	27	8 2e	29	10 2e	29	10 2e	33 2e	1e	33 2e	1e
Lorain, O. N3	24	12 7e	27	12 7e	27	12 7e	29	14 2e	29	14 2e	33 2e	19 3e	33 2e	19 3e
Youngstown, Y1	24	7 6e	27	9 2e	27	9 2e	29	11 2e	29	11 2e	33 2e	16	33 2e	16

ELECTRIC WELD STANDARD PIPE, T & C

Youngstown, R2	24	8 7e	27	8 7e	27	8 7e	29	10 7e	29	10 7e	33 7e	15 3e	33 7e	15 3e

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛	¼	⅜	½	¾	1	1¼	1½	2
List Per Ft	.30c	.40c	.53c	.67c	.86c	1.12	1.47	1.71	$2.26
Pounds Per Ft	.24	.42	.57	.85	1.13	1.68	2.28	2.73	3.68

	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Benwood, W. Va. W10	29 5	9 2e	24	2 2e	3 5	17 7e	7 7e	33	14 2e	33	14 2e
Butler, Pa. F6	30 5	12 2e	24	1 7e	20	5 5	5				
Elba, Pa. N2	30 5	12 2e	24	1 7e	20	5 5	33	14 2e	33	14 2e	33	14 2e
Sharon, Pa. M6	29 5	9 2e	24	4 2e	18	8 2e						
Sparrows Pt., Md. B2	28 5	9 2e	24	3 7e	18	7 5e						
Youngstown, R2							33	14 2e	33	14 2e	33	14 2e
Wheatland, Pa. W4	28 5	9 2e	24	3 7e	18	7 5e						

Galvanized pipe discounts based on zinc price of 13c lb. (c.i.f. 12.5c, c.i.f. 14.5c) c.i.f. with discounts adjusted depending on price of zinc at time of shipment, c.i.f. 15c

CLAD STEELS

Cents per pound; add 4.7% to base price and extras

	Plates		Sheets	
Cladding	Carbon Base		Carbon Base	Copper Base
Stainless	10%	20%	10%	20%	Both Sides
302	25 7e	26 2e	27 5e	22 00
304	25 00	26 50	27 5e	27 5e	22 00
309	30 00	35 00		
310	36 00	41 00			144 00
316	29 50	34 00	26 00	35 00	36 50	
317	34 50	39 00		
318	33 50	38 00		
321	26 50	31 00	32 00	25 00	33 00	111 00
347	27 50	32 00	24 00	33 50	33 50	130 00
405	21 2e	27 7e		
410	20 7e	27 2e		
Nickel	23 00	43 00		
Inconel	11 2e	34 18				165 00
Monel	14 00	16 28		
Copper					11 00	

	Strip			
	Carbon Base			
	Cold-Rolled		Hot-Rolled	
	10%	Both Sides	10%	Both Sides
Nickel	11 00	31 00		
Copper	23 20	26 60	20 20	26 10

Deoxidized. Production points for carbon base products: Stainless plates, sheets Coatesville, Pa. A3 and New Castle, Ind. L4; stainless clad plates Claymont, Del. C22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, monel, inconel, Monessen plates, Coatesville L7; nickel, copper clad strip Carnegie, Pa. S18. Production point for copper base sheets is Carnegie, Pa. A15.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(Each, Midwestern points, per cent off list for less than case lots to consumers)

½ in. and shorter

⅜ in. & smaller diam.	15
½ in.	18 e
⅝ in. & larger	17 e
Longer than 6 in.	
All diams.	11
Lag bolts, all diams.	11
Log bolts, ½ in. and shorter	25
over 6 in. long	21
Ribbed Necked Carriage	15 e
Blank	34
Plow	34
Step, Elevator, Tap and Sleigh Shoe	21
Tire Bolts	21
Boiler & Fitting Up Bolts	31

NUTS

	Reg. Hvy.
H.P. & C.P. Square	
⅜ in. & smaller	14
½ in. & ⅝ in.	12
¾ in.	9 e
1 in. & larger	7 e
H.P. Hex	
⅜ in. & smaller	26
½ in. & ⅝ in.	16 e
¾ in. & larger	12
C.P. Hex	
⅜ in. & smaller	26
½ in. & ⅝ in.	23
¾ in. & 1 in.	17 e
1 in. & larger	12

	Reg. Hvy.
⅜ in. & smaller	22
½ in. & ⅝ in.	17 e
¾ in. & 1 in.	12
1 in. & larger	6 e

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case of keg quantities)

	Reg.	Hvy.
⅜ in. & smaller	24	28 e
½ in. & ⅝ in.	20 e	22
¾ in. & 1 in.	14	15
1 in. & larger	11	8 e
⅜ in. & smaller		24
½ in. to 1 in.		28 e
1 in. & larger		26

SQUARE HEAD SET SCREWS

(Packaged, per cent off list)

1 in. diam. x 6 in. and shorter	38
1 in. and smaller diam. x over 6 in.	26

HEADLESS SET SCREWS

(Packaged, per cent off list)

No. 10 and smaller	35
¼ in. diam. & larger	16
N.F. thread all diams.	10

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	18 & 10
Plated finishes	31 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged, per cent off list)

6 in. or shorter	
½ in. & smaller	42
over ½ in. through 1 in.	34
Longer than 6 in.	
½ in. and smaller	26
over ½ in. through 1 in.	4

METALLURGICAL COKE

Price per ton

BEEHIVE OVENS

Connellsville	$14.50-15.00
Connellsville fdy.	16.50-17.50
New River foundry	20.50
Wise county, foundry	15.50
Wise county, furnace	15.00

OVEN FOUNDRY COKE

Kearney, N. J. ovens	$24.00
Everett, Mass. ovens	
New England, del.	26.00
Chicago ovens	24.50
Chicago, del.	26.00
Terre Haute, ovens	24.00
Milwaukee, ovens	24.50
Indianapolis, ovens	24.50
Chicago, del.	25.50
Painesville, O., ovens	24.00
Cleveland, del.	25.00
Erie, Pa., ovens	25.00
Birmingham, ovens	21.50
Cincinnati, del.	27.20
Lonestar, Tex., ovens	18.50
Philadelphia, ovens	25.50
Swedeland, Pa., ovens	25.50
St. Louis, ovens	
St. Louis, del.	26.00
Portsmouth, O., ovens	24.00
Cincinnati, del.	26.62
Detroit, ovens	25.50
Detroit, del.	26.00
Buffalo, del.	28.00
Flint, del.	28.21
Pontiac, del.	27.00
Saginaw, del.	28.58

Or within $1.50 freight zone from works

NOTE—Current prices on boiler tubes, coal chemicals, fluorspar, electrodes and ferroalloys appeared on page 551, Jan. 5 issue.

STAINLESS STEEL

(Add 4.7% on base price and extras)

Type	Sheets	Bars C R Strip	Bars Wire Structurals
301	41 00	34 00	31 2e
302	41 2e	36 2e	31 5e
303	43 2e	40 2e	34 00
304	43 2e	38 2e	33 00
305	46 00	44 00	41 2e
316	57 00	56 00	49 2e
321	48 2e	48 2e	37 00
347	53 2e	52 2e	41 5e
410	36 00	36 00	25 2e
416	37 00	37 00	26 2e
420	44 00	47 00	31 2e
430	39 00	31 00	26 2e
501	27 5e	26 00	14 2e
502	28 5e	27 00	15 2e

Bolt Types 301 347 and 410 sheets except 301 and 304 E.2

Brackenridge, Pa. sheets, A1 quotes slight variations on Types 301 347

Bridgeville, Pa. bars, wire, sheets & strip F1

Butler, Pa. sheets and strip except Types 301 302 416 420 501 & 502 A10

Carnegie, Pa. sheets and strip except Types 303 416 501 & 502 S18

Cleveland, strip A7

Detroit, strip M1 quotes 34 cts on Type 301 36 50 302 38 50 304 38 50 316 52 cts 347 39 50 410 31 cts 430

Dunkirk, N. Y. bars, wire A4 quotes slight variations on Types 301 347

Duquesne, Pa. bars U5

Fort Wayne, Ind. bars and wire except Types 301 & 502 J6 quotes slight variations on Types 301 347

Gary, Ind. sheets except Type 416 U5

Harrison, N. J. strip and wire C15

Massillon, O. all items R2

McKeesport, Pa. strip Type 410 bars & wire Types 410 through 430 and 31 2e on Type 302 32 2e on 301 & 304 32 7e on 501 & 502 on 316 36 2e on 321 41 2e on 347 E2

McKeesport, Pa. bars, sheets except Type 416 U5

Middletown, O. sheets and strip except Types 303 416 420 501 and 502 A10

Midland, sheets & strip C15

Mitchell, Pa. bars U5

Muncie, Ind. wire L7 quotes Types 302 304 430

Pittsburgh, sheets C15

Reading, Pa. strip except 34 2e on Type 301 and 36 cts on 302 bars except 31 2e on Type 301 and 31 2e on 302 C1

Sharon, Pa. strip except Types 301 302 416 501 502 and 34 2e on Type 301 S3

So. Chicago, Ill. bars & structurals U5

Syracuse, N. Y. bars wire & structurals C15

Titusville, Pa. bars U1

Wallingford, Conn. strip W2 quotes ½ 2e higher

Washington, Pa. bars, sheets & strip except ½ 2e higher on Type 301 S3

Washington, Pa. Types 301 through 347 sheets & strip except 301 302 316 sheets 62 cts; strip 68 cts W4

Watervliet, N. Y. structurals & bars A4 quotes variations on Types 301 347

Waukegan, bars & wire A2

West Leechburg, Pa. strip A8 quotes slight variations on Types 301 347

Youngstown, strip except Types 301 302 416 416 501 and 502 and 34 2e on Type 301 C8

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh except as otherwise noted)

Sponge Iron	Cents
98.5% Fe, annealed	18 00
Unannealed	16 50
Swedish, c.i.f. N. Y. c.l. in bags	10 00
Electrolytic Iron	
Annealed 99.5% Fe	42 00
Unannealed, carbonyl Fe	36 00
Fe, annealed, cerium Fe, rounds 325 mesh	21 00
Powder Flakes	45 00
Carbonyl Iron	
97 to 99.5% size 5 to 10 microns	85 00-115 00
Aluminum	
Carlots, freight allowed	31 00
Atomized, 500 lb drums, freight allowed	33 00
Antimony, 500 lb lots	71 00
Brass, 20 ton lots	31 00-34 25
Bronze, 10 ton lots	41 25-60 00
Phosphor Copper, 20 ton lots	50 00
Copper	
Electrolytic	37 25
Reduced	33 25
Lead	7 50
Magnesium	2 00-2 00
Manganese	
Minus 100 mesh	32 00
Minus 35 mesh	32 00
Minus 200 mesh	62 00
Nickel, unannealed	90 00
Nickel Silver, 5 ton lots	46 00
Silicon	38 50
Solder	50
Stainless steel, 302	81 00
Zinc, 20 ton lots	19 00-31 00
Tungsten	Dollars
Melting grade, 99% on 325 mesh	
1000 lb and over	3 75
Less than 1000 lb	4 00
Molybdenum	
99% minus 200 mesh	1 21
Chromium, electrolytic	1 50

Price cost of lots

"The enthusiastic response of our employees . . ."

ALDEN G. ROACH

President, Columbia-Geneva Steel Division and Consolidated Western Steel Division, United States Steel Corporation

"It is most gratifying to me that the employees of the Columbia-Geneva Steel Division and the Consolidated Western Steel Division of United States Steel Corporation have accorded meaning to their belief that the security of our nation rests upon our cooperative effort. The enthusiastic response of our employees made me doubly glad we conducted a person-to-person canvass for the Payroll Savings Plan for U. S. Defense Bonds."

The experience of Columbia-Geneva and Consolidated Western Divisions of United States Steel Corporation is not an isolated one.

Since January 1, 1951, hundreds and hundreds of companies have conducted person-to-person canvasses of their plants and offices. In every instance, employee participation in the Payroll Savings Plan has increased—sometimes from a low figure—to 60, 70, 80%. In a number of plants, participation passed the 90% mark.

The explanation is simple.

Employees *want* to provide for their future security.

Given an opportunity to enroll in the Payroll Savings Plan they respond immediately—as evidenced by the fact that more than 2,000,000 men and women have joined the Payroll Savings Plan since January 1, 1951.

The monthly take-home savings of the 7,500,000 now in the Payroll Savings Plan totals $150,000,000 per month—and growing rapidly.

As a step toward *your* personal security, and the security of your associates, bring this page to the attention of your top executive. Tell him that—

- a person-to-person canvass of your plant can be conducted without pressure, prize awards or other stimulation. (In many plants, employee organizations have undertaken the actual distribution of Payroll Savings Application Blanks.)
- The Savings Bond Division, U. S. Treasury Department, Suite 700, Washington Building, Washington, D. C., will gladly help your company with suggestions, posters, envelope stuffers and other aids.

The U. S. Government does not pay for this advertisement. It is donated by this publication in cooperation with the Advertising Council and the Magazine Publishers of America.

STEEL

The Weekly Magazine of Metalworking

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound for delivery within switching limits, subject to extras.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Galv. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140††		Carbon	Floor
New York (city)	6.56	7.22	8.26	6.56	6.89	6.89	7.54‡	11.34	6.69	6.96	8.31
Jersey City (city)	6.35	7.27	8.47	6.75	...	6.59	7.53	9.54	6.39	6.60	8.01
Boston (city)	6.71	7.56	8.74	6.75	...	6.62	7.69‡	11.38	6.76	6.95	8.18
Boston (c/l)	6.51	7.36	8.54	6.55	...	6.42	7.49‡	11.18	6.56	6.45	7.98
Phila. (city)	6.36	7.38	8.56	6.70	8.55	6.67	7.20‡	11.04	6.42	6.40	7.69
Phila. (c/l)	6.41	7.13	8.30	6.40	8.30	6.42	7.43‡	10.79	6.17	6.24	7.36
Balt. (city)	6.61	7.37	8.57	6.62	...	6.61	7.62‡	11.37	6.67	6.67	7.90
Balt. (c/l)	6.51	7.17	8.37	6.42	...	6.41	7.42‡	11.17	6.47	6.47	7.70
Norfolk, Va.§	7.60	...	...	...	...	6.84	8.45	...	7.25	6.64	7.33
Richmond, Va.	6.44	6.95	8.48	6.63	...	6.30	7.28‡	...	6.58	6.68	7.80
Wash. (w/hse.)	6.31	7.61	8.80	6.80	...	6.99	7.78	...	6.93	6.96	8.17
Buffalo (w/hse.)	6.00	6.85	8.41	6.41	...	6.10	7.13‡	11.27	6.28	6.50	7.82
Buffalo (del.)	6.80	6.65	8.41	6.21	...	5.90	6.93‡	11.07	6.08	6.30	7.62
Pitts. (w/hse.)	6.80	6.65	8.00	6.04	...	5.85	6.90‡	10.65	5.95	5.95	7.18
Detroit (w/hses.)	6.07	6.92	8.64	6.13	7.70-8.63	6.12	7.10‡	10.92	6.42	6.47	7.52
Cleveland (del.)	6.00	6.85	8.34	6.20	...	6.00	7.10‡	10.99	6.48	6.32	7.71
Cleve. (w/hse.)	5.80	6.65	8.14	6.00	...	5.80	6.90‡	10.79	6.28	6.12	7.51
Cincin. (city)	6.28	6.87	8.62	6.28	...	6.28	7.31‡	11.22	6.52	6.62	7.75
Chicago (city)	6.00	6.85	8.20	6.03	...	6.03	7.00‡	10.86	6.15	6.15	7.38
Chicago (w/hse.)	5.80	6.65	8.00	5.83	...	5.83	6.80‡	10.65	5.95	5.95	7.18
Milwau. (city)	6.17	7.02	8.37	6.20	...	6.20	7.27‡	11.02	6.32	6.32	7.56
Milwau. (c/l)	5.97	6.82	8.12	6.00	...	6.00	7.07‡	10.82	6.12	6.12	7.36
St. Louis (del.)	6.30	7.14	8.50	6.34	...	6.33	7.40‡	11.15	6.55	6.55	7.78
St. L. (w/hse.)	6.10	6.94	8.00	6.14	...	6.13	7.20‡	10.95	6.35	6.35	7.58
Birmingham (city)	6.50	6.80	7.55	6.50	...	6.50	8.40	...	6.10	6.25	8.65
Birmingham (w/hse.)	6.30	6.60	7.20	6.30	...	6.30	8.40	...	5.90	6.10	8.65
Los Ang. (city)	6.80	8.65	9.80	6.95	11.40	6.80	8.80‡	12.25	6.80	6.85	9.10
L. A. (w/hse.)	6.60	8.45	9.60	6.75	11.20	6.60	8.60‡	12.05	6.60	6.65	8.90
Seattle-Tacoma	7.37	9.17	9.85	7.27	...	7.27	9.62‡	11.90‖	6.95	7.26	9.11
S. Fran. (w/hse.)	6.90	8.20	9.60	6.75	...	6.65	8.85‡	12.05	6.50 ¶	6.75	8.90

*Prices do not include gage extras. †Prices include gage and coating extras except Birmingham coating extra excluded; and Los Angeles (gage extra excluded). ‡Includes 2½-cent special bar quality extra, $ as rolled. §As rolled. ‖Base quantities, 2000 to 9999 lb except as noted. ¶Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; ††500 to 1499 lb; ‡‡150 to 1499 lb; §§1000 to 1999 lb.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural), lower lake ports.

Old range bessemer	$9.45
Old range nonbessemer	9.30
Mesabi bessemer	9.20
Mesabi nonbessemer	9.05
High phosphorus	9.05

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 1, 1950, in applicable lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

Eastern Local Iron Ore

Cents per unit del. E. Pa.

Foundry and basic 56-62% concentrates, contract	17.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports.

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	21.00
North African hematites (spot)	26.00-28.00
Brazilian iron ore, 67-69% (spot)	32.00

Tungsten Ore

Net ton unit, duty paid.

Foreign wolframite and scheelite, per net ton unit	$65.00
Domestic scheelite, mines	65.00

Manganese Ore

Manganese, 48% nearby, $1.18-$1.22 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 50c-87c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48%, 3:1 to 2:1	$39.00-$42.00
48%, 3:1	44.00-45.00
48%, no ratio	30.00-32.00
South African Transvaal	
44%, no ratio	$27.00-$28.00
48%, no ratio	34.00-35.00
Brazilian	
44%, 2.5:1 lump	nom.
Domestic (Calif. nearest seller)	
48%, 3:1	$39.00

Molybdenum

Sulphide concentrates per lb. molybdenum content, mines	$1.00

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr, c.l., packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr, 67-72%) Contract, carload, lump, bulk, max. 0.03% C 37.60c per lb of contained Cr, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 34.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.3c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr, 62-66%, C 5-7%.) Contract, c.l. S.M.x D, bulk, 26.25c per lb of contained Cr, c.l. packed 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 59-64%, Si 28-32%, C 1.25% max.) Contract, carload, packed, S.M.x D, 18.35c per lb of alloy; ton lot 19.2c, less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-45%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 23.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 25.50c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-39%, Al 7-9%, C 0.05% max.) 25.75c per lb of contained silicon plus 16.4c per lb of contained silicon plus aluminum 37 x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) contract carload 1" x D, packed, max 0.50% C grade, $1.12 per lb of contained chromium, ton lot $1.14, less ton $1.16. Delivered. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.5c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe) c.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max. 0.10% calcium grade. Deduct 0.5c for max. 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.9c per lb of alloy, ton lots packed 11.30c, 200 to 1999 lb 11.65c, smaller lots 12.15c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade, (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.10 per lb of contained V. Delivered. Spot, add 10c. **Crucible Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max), $3.20. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.50.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 85c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.25 per lb contained V_2O_5, freight allowed. Spot, add 5c.

BORON ALLOYS

Ferroboron: B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 17 x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (18% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb, smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y. Freight allowed same as high-carbon ferrotitanium.

TUNGSTEN ALLOYS*

Ferrotungsten: (70-80% W, 10,000 lb W or more, $1.85 per lb of contained W; 2000 lb W to 10,000 lb W, $1.95; less than 2000 lb W, $2.02, f.o.b. Niagara Falls, N. Y.

*Government ceiling prices, effective May 7, 1951, f.o.b. Niagara Falls, N. Y., basis

NOTE: Current prices on manganese, titanium and "other ferroalloys" appeared on page 113 Dec. 25 issue; calcium, zirconium, briquetted alloys and refractories, page 553, Jan. 5.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 1, 1952

STEELMAKING SCRAP COMPOSITE

Jan. 8	$43.00
Dec. 31	43.00
Dec., 1952	43.00
Jan., 1952	43.00
Jan., 1948	40.75

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin, and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin

Basing Point	Grade 1 No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Rail-road
Alabama City, Ga.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	42.00	44.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Clarksville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.50	43.50
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap

O-H and Blast Furnace Grades

2 No. 1 Busheling	Base
3 No. 1 Heavy Melting	$1.00
4 No. 2 Heavy Melting	1.00
5 No. 2 Bundles	1.00
6 Machine Shop Turnings	10.00
7 Mixed Borings and Short Turnings	6.00
8 Shoveling Turnings	6.00
9 No. 2 Busheling	1.00
10 Cast Iron Borings	6.00

Elec. Furnace and Idry. Grades

11 Billet, Bloom & Forge Crops	7.50
12 Bar Crops & Plate	5.00
13 Cast Steel	5.00
14 Punchings & Plate Scrap	2.50
15 Electric Furnace Bundle	2.00
Cut Structurals & Plate	
16 3 feet and under	5.00
17 2 feet and under	5.00
18 1 foot and under	6.00
19 Briquetted Cast Iron Borings	Base
Foundry Steel	
20 2 feet and under	Base
21 1 foot and under	2.00
22 Springs and Crankshafts	1.00
23 Alloy Free Turnings	5.00
24 Heavy Turnings	1.00
25 Briquetted Turnings	Base
26 No. 1 Chemical Borings	3.00
27 No. 2 Chemical Borings	1.00
28 Wrought Iron	10.00
29 Shafting	10.00
31 Old Tin & Terne Plated Bundles	10.00

Unprepared Grades

When compressed constitutes

32 No. 1 Bundles	5.00
33 No. 2 Bundles	5.00
34 Other than material suitable for hydraulic compression	8.00

Restrictions on Use

(1) Prices for Grades 11 and 24 may be charged only when shipped to a consumer directly from an industrial producer, otherwise ceiling prices shall not exceed prices established for grades 12 and 3, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 24, for briquetting and direct charge into an electric furnace, otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron, otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open hearth.

(4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and acid open hearth furnaces or foundries, or in basic O-H or blast furnace under NPA allocation or OPS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or reboiling purposes.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap

2 No. 2 Heavy Melting Steel	$2.00
3 No. 2 Steel Wheels	Base
4 Hollow Bored Axles and Axles with keyways between the wheelseats	Base
5 No. 1 Busheling	3.50
6 No. 1 Turnings	3.00
7 No. 2 Turnings, Drillings & Borings	12.00
8 No. 2 Cast Steel and uncut wheelcenters	6.00
9 Uncut Frogs, Switches & Guards	Base
10 Flues, Tubes & Pipes	8.00
11 Structural Wrought Iron and/or steel uncut	6.00
12 Destroyed Steel Cars	8.00
13 No. 1 Sheet Scrap	9.50
14 Scrap Rails, Random Lengths	2.00
15 Rerolling Rails, Cut Rails	7.00
16 3 feet and under	5.00
17 2 feet and under	6.00
18 15 inches and under	8.00
19 Cast Steel, No. 1	3.00
20 Uncut Tires	2.00
21 Cut Tires	5.00
Bolsters & Side Frames	
22 Uncut	Base
23 Cut	5.00
24 Angles, Splice Bars & Tie Plates	5.00
25 Solid Steel Axles	12.00
26 Steel Wheels, No. 3 or over	Base
27 Steel Wheels, No. 2	5.00
28 Spring Steel	5.00
29 Couplers & Knuckles	5.00
30 Wrought Iron	8.00
31 Firebrixes	8.00
32 Rails	6.00
33 No. 2 Sheet Scrap	11.00
34 Cylinders, Heads, Cut Ends cut apart	6.00
35 Unassorted Iron & Steel	6.00
36 Unprepared scrap, not suitable for hydraulic compression	8.00

Preparation Charges

Ceiling fees per gross ton which may be charged for intrinsic preparation of any grade of steel scrap of dealer or industrial origin, authorized by OPS rule:

(1) For preparing into Grades No. 3, No. 4 or No. 2 8s.
(2) For hydraulically compressing Grade No. 1, $6 per ton; Grade No. 2, $8.
(3) For crushing Grade No. 6, $12. For preparing into
(4) Grade No. 2, $6.
(5) Grade No. 16, $6.
(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, $10.
(7) Grade No. 17 or No. 21, $11.
(8) Grade No. 18, $12.
(9) For hydraulically compressing Grade No. 1, 8s.
(10) For preparing into Grade No. 2s, $10.

Ceiling fees per gross ton which may be charged for intrinsic preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, 8s.
(2) For hydraulically compressing Grade No. 13, 8s. For preparing into
(3) Grade No. 16, $1.
(4) Grade No. 17, 8s.
(5) Grade No. 18, 8s.
(6) Grade No. 21, $1.
(7) Grade No. 23, $1.

Ceiling fees per gross ton which may be charged for intrinsic preparation of cast iron are limited to:

(1) For preparing Grade No. 5 into Grade No. 7, 8s.
(2) For preparing Grade No. 3 into Grade No. 11, $7.
(3) For preparing Grade No. 3 into Grade No. 1, $1.

CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron

1 No. 1 Cupola	$48.00
2 No. 2 Charging Box	47.00
3 No. 3 Hvy. Breakables	45.00
4 No. 1 Burnt Cast	41.00
5 Cast Iron Brake Shoes	41.00
6 Stove Plate	46.00
7 Clean Auto Cast	52.00
8 Unstripped Motor Blocks	43.00
9 Wheels, No. 1	47.00
10 Malleable	56.00
11 Drop broken machinery	52.00

OPEN MARKET

(Delivered prices include broker's commission.)

Birmingham
(Delivered)

Shoveling turnings	$30.00-32.00
Cast iron borings	30.00-32.00
No. 1 cupola cast	47.00-48.00
Stove plate	42.00
Charging box cast	36.00-40.00
Heavy breakable	36.00-37.00
Drop broken machinery	42.00-43.00
Unstripped motor blocks	33.00-36.00

Boston
(F.o.b. shipping point)

No. 1 cupola cast	41.00
Heavy breakable	36.00
Stove plate	34.00-35.00
Unstripped motor blocks	30.00

Buffalo
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 1 busheling	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Cast iron borings	38.00
Short shoveling turnings	38.00
No. 1 machinery cast	45.00-46.50
No. 1 machinery cast	49.00-50.00

Chicago
(Delivered)

No. 2 heavy melting	42.50
No. 2 bundles	42.50
Machine shop turnings	30.50-32.50
Mixed borings, turnings	34.50-36.50
Shoveling turnings	34.50-36.50
Cast iron borings	34.50-36.50
No. 1 cupola cast	42.00-44.00
Charging box cast	40.00-42.00
Heavy breakable	37.00-38.00
Burnt cast	37.00-37.00
Cast iron brake shoes	40.00-42.00
Stove plate	41.00-43.00
Clean auto cast	44.00-46.00
Unstripped motor blocks	35.00-37.00
Malleable	46.00-48.00
Drop broken machinery	46.00-48.00

Cleveland
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Shoveling turnings	38.00
Cast iron borings	38.00
(F.o.b. shipping point)	
No. 1 cupola	45.00
Charging box cast	42.00
Burnt cast	41.00
Stove plate	46.00
Clean auto cast	52.00
Unstripped motor blocks	43.00
Malleable	56.00
Drop broken machinery	52.00

Detroit
(F.o.b. shipping points)

No. 1 cupola cast	47.00-48.00
Heavy breakable	43.00-44.00
Clean auto cast	49.00-50.00
Unstripped motor blocks	40.00-41.00
Drop broken machinery	50.00-52.00
Charging box cast	44.00-45.00

Los Angeles
(Delivered)

No. 1 heavy melting	34.00
No. 2 heavy melting	29.00
No. 1 bundles	35.00
No. 2 bundles	29.00
No. 1 cupola cast	46.00
Machine shop turnings	14.00

New York
(Brokers' buying prices)

No. 2 heavy melting	35.00
Mixed borings, turnings	29.00
Machine shop turnings	25.00
Cupola cast	40.00-41.00
Unstripped motor blocks	34.00-32.00

Philadelphia

No. 1 heavy melting	41.50
No. 2 heavy melting	41.50
No. 1 bundles	42.50
No. 2 bundles	41.50
No. 1 busheling	42.50
Mixed borings, turnings	36.50
Machine shop turnings	32.50
Short shoveling turnings	36.50
No. 1 cupola cast	45.00-46.00
Unstripped motor blocks	38.00†
Heavy breakable	35.00‡
Machinery cast	52.00*
Charging box cast	42.50*

Ceiling price † Nominal
‡ Shipping point * Delivered

Pittsburgh
(Delivered)

No. 2 heavy melting	44.00
No. 1 bundles	45.00
No. 2 bundles	44.00
Machine shop turnings	35.00
Mixed turnings	39.00
No. 1 cupola cast	48.50
Heavy breakable	43.00

Ceiling price

San Francisco
(Delivered)

No. 2 heavy melting	29.00
Machine shop turnings	14.00
No. 2 bundles	29.00
No. 1 cupola cast	44.00

Seattle
(F.o.b. shipping point)

No. 1 bundles	30.00
No. 1 cupola cast	41.00
Heavy breakable	36.00-38.00
Unstripped motor blocks	31.00

St. Louis
(Delivered)

No. 1 cupola	48.00
Unstripped motor blocks	37.00

Youngstown
(Delivered)

No. 2 heavy melting	43.00
No. 2 bundles	43.00
Machine shop turnings	34.00

HAMILTON, ONT.
(Delivered Prices)

Heavy Melt	$35.00
No. 1 Bundles	35.00
No. 2 Bundles	35.00
Mechanical Bundles	32.00
Mixed Steel Scrap	31.00
Mixed Borings, Turnings	32.00
Rails, Remelting	35.00
Rails, Rerolling	44.50
Busheling	36.00
Busheling new factory	
Prepd.	33.00
Unprepd.	31.00
Short Steel Turnings	32.00
Cast Iron Grades	
No. 1 Machinery Cast	50.00

F.o.b. shipping point

For the Purchase or Sale of

Iron and Steel Scrap . . .

CONSULT OUR NEAREST OFFICE

The energy and integrity of our organization is ready to serve your best interests . . .

Since 1889, Luria Brothers & Company, Inc. have made fair dealings their constant aim.

CONSULT OUR NEAREST OFFICE FOR THE PURCHASE AND SALE OF SCRAP

LURIA BROTHERS AND COMPANY, INC.

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LINCOLN-LIBERTY BLDG.

Philadelphia 7, Penna.

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LEBANON, PENNA. — DETROIT (ECORSE), MICHIGAN

READING, PENNA. — PITTSBURGH, PENNA.

MODENA, PENNA. — ERIE, PENNA.

OFFICES

BIRMINGHAM, ALA.	DETROIT, MICH.	PITTSBURGH, PENNA.
BOSTON, MASS.	HOUSTON, TEXAS	PUEBLO, COLORADO
BUFFALO, N. Y.	LEBANON, PENNA.	READING, PENNA.
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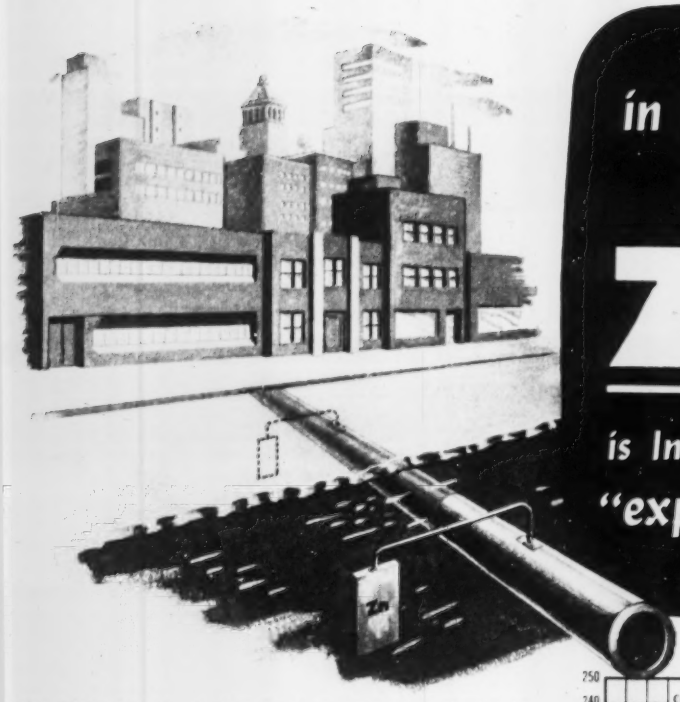
CLEVELAND, OHIO	NEW YORK, N. Y.	SAN FRANCISCO, CAL.
	SEATTLE, WASH.	

LEADERS IN IRON AND STEEL SCRAP SINCE 1889



in fighting corrosion with corrosion—

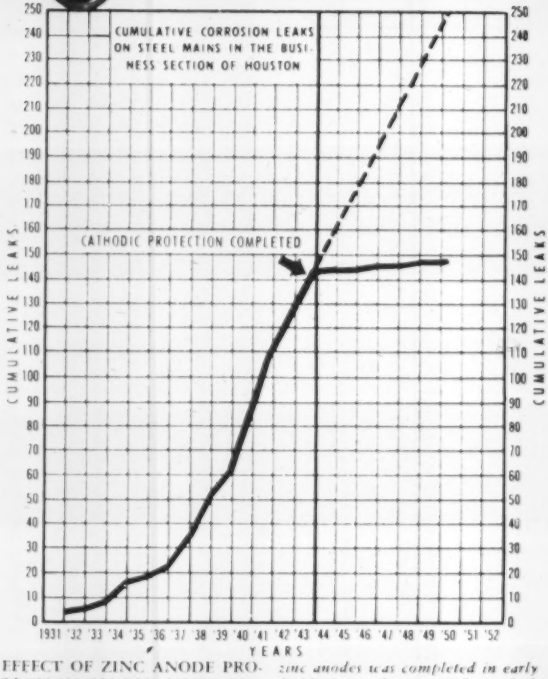
ZINC

is Industry's most effective "expendable" weapon!

NEARLY 50% of all the zinc consumed annually in the United States – around 400,000 tons – is used in galvanizing, i.e., protective zinc coating on iron or steel. This is ample evidence of the firmly established position of the metal as industry's most effective and economical "sacrificial" weapon in its unceasing combat with rust. The electrochemical reaction between iron and zinc, which has resulted in the dominance of zinc in this field, is precisely the same as that which takes place in the relatively new and growing use of the metal for cathodic protection of pipe lines and other underground iron and steel structures. The sole difference between the two methods being that in cathodic protection the zinc, in the form of anodes, is buried adjacent to a pipe line and connected by a conductor, while in galvanizing the zinc is bonded to iron or steel. In either form, zinc "protects" – as has been attested to by those progressive companies who have used zinc anodes for this purpose. For example, in the Northwest, a utility company reports:

> *"The most interesting installation was made in 1942 on four inch bare pipe located in the seepage from an irrigation ditch that circled the brow of a hill in such a manner that the pipeline trench intersecting the irrigation ditch was kept moist throughout the season. Approximately seven hundred feet of this four inch line had been replaced twice. In the spring of 1942 leakage developed and when the pipe was uncovered it was found to be in bad condition. Pending replacement, repairs were made and seventeen zinc anodes were installed with series-parallel connections. In the press of other work, this replacement job was put aside and in 1944 it was found that no further leaks had developed. In 1948 the replacement had still not been made and we were getting a good potential-to-ground and plenty of protective current. The last test made in the spring of 1950 shows a slight increase in the potential-to-ground and the pipe has not been replaced nor have we felt it even necessary to uncover it for visual inspection."*

The graph at right provides additional evidence from the State of Texas. Here are two examples, under widely dissimilar conditions, where zinc has proved itself as a highly efficient cathodic protector for underground pipe lines. This is not surprising in view of the long-recognized superiority of the metal in the field of galvanizing.


CUMULATIVE CORROSION LEAKS ON STEEL MAINS IN THE BUSINESS SECTION OF HOUSTON
CATHODIC PROTECTION COMPLETED
CUMULATIVE LEAKS
CUMULATIVE LEAKS
YEARS
1931 '32 '33 '34 '35 '36 '37 '38 '39 '40 '41 '42 '43 '44 '45 '46 '47 '48 '49 '50 '51 '52

EFFECT OF ZINC ANODE PROTECTION ON OLD LINES. *Most of the United Gas Corp.'s welded-steel-gas distribution mains, coated with hot asphalt and asbestos wrapper, were installed before 1930. Cathodic protection of mains with zinc anodes was completed in early 1944. Curve shows cumulative leak record of these mains. Only 5 corrosion leaks occurred in the 6 years since cathodic protection was applied, comparing with 142 during 1932-1944.*

ST. JOSEPH LEAD COMPANY 250 PARK AVE., N.Y. 17

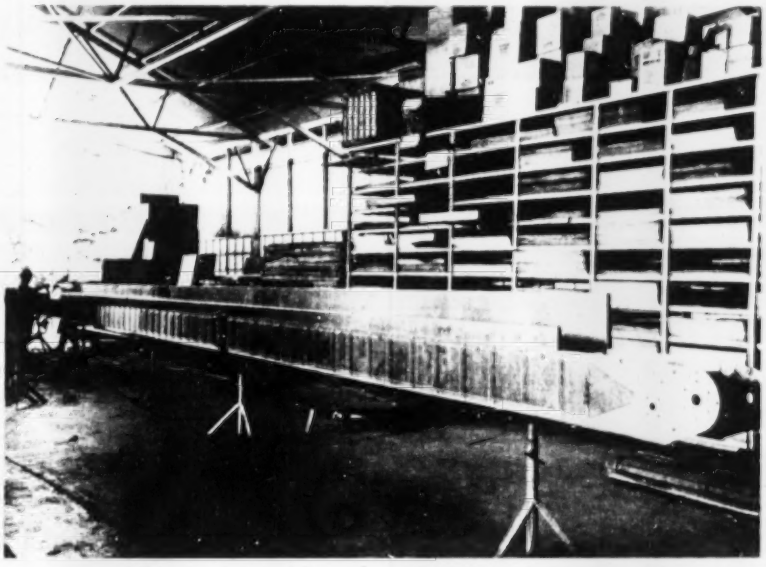
for Galvanic & Cathodic Protection Zinc is Standard

ST. JOE Electro-Thermic ZINC: *High grade, Intermediate, Brass special, Prime western*

Zn

BUNKER HILL 99.99+ % ZINC

The Metal Market



New Apparatus Speeds Pineapple Harvest

A new apparatus developed by Kaiser Aluminum & Chemical Corp., Oakland, Calif., will expedite harvesting of pineapples which must be done quickly. Kaiser's engineers developed and tested this semi-tension field boom constructed with upper and lower ribs of extruded aluminum and a web of light gage sheet aluminum. It is high enough to clear the pineapple but not too high for pickers

Price increases on copper, aluminum and nickel are almost sure to come whether or not government price controls remain after Apr. 30

PRICE HIKES on at least three metals used by industry are almost inevitable. If carte blanche pricing power is returned to industry Apr. 30 when Defense Production Act powers for price and wage controls expire, higher immediate prices can be regarded as a foregone conclusion. Even if some reins are kept on, equitable adjustments must be made.

Three for Sure Copper, aluminum and nickel are straining at the leash now. Long-suffering copper producers have only to point to prevailing prices of foreign metal to justify relief. They say a supply easing would result because about 150,000 tons of copper and copper alloy scrap now withheld would enter the market.

Addition of this bonus metal, plus a 150,000-ton domestic production increase expected this year would mean about 300,000 tons more copper for consumers in 1953. That's much more optimistic than DPA's estimate. The agency expects total supply of CMP copper products to amount to 2,590,000 tons in 1953 as against 2,485,000 tons in 1952.

Bait Untouched Although the Big Three aluminum producers unanimously rejected the government's offer of a price boost in return for contract concessions, the industry has sniffed the bait and intends to get it without taking the hook. With decontrol they'll get a price increase without strings attached. Present thinking is in terms of one cent a pound on ingot and 5 per cent on mill products.

DPA forecasts a 28 per cent increase in available aluminum supply between the fourth quarter of 1952 and third quarter of 1953.

Sixty-Cent Nickel Because the Canadian dollar is now worth about $1.03 in American money, International Nickel Co. believes it is entitled to 3½ cents more for metal sold in the U. S. At the present ceiling of 56.5 cents a pound, the Canadian company is losing over a cent and a half per pound on U. S. sales. Any change in ceiling requires approval by the Canadian Defense Production minister. The company has an agreement with the U. S. government to supply nickel at a fixed price over a definite period and is now talking the problem over with OPS.

Danger Past Ceilings on lead and zinc, which have gone through the price mill in the past eight months, are merely academic and in no danger of break-through. Lead declined to 14.30 cents, St. Louis, after having moved up a quarter-cent on Dec. 30 to 14.55 cents.

Zinc stiffened after opening of London trading, moved up to 13 cents. But consumers are still shy about buying. Extent of average price purchases indicates lack of confidence in so swift a recovery.

Aluminum Distribution Up

Aluminum users received 1,350,000 tons of primary and secondary metal last year, topping 1951 by 8 per cent, says NPA. New facilities turned out 125,000 tons of the total 935,000 tons poured. When domestic expansion programs are completed, NPA estimates 2.25 million tons will be available for consumption, including imports and scrap. About 290,000 tons of scrap were recovered in 1952, up 7 per cent from 1951.

Nonferrous Briefs

Brass scrap is flooding the market since the calendar change. Carload purchases under ceiling prices are reported in the East.

The primary aluminum industry can now be subdivided into the "Big Three" and the "Little Three" since Harvey Machine Co. got the green light for a 54,000-ton smelter at The Dalles, Oreg.

Brass and bronze ingot business last year was worst since 1949. Shipments were off nearly 17 per cent from 1951.

STEEL'S Metal Price Averages for Dec., 1952

(Cents per pound)

Electrolytic Copper, del. Conn.	24.500
Lead, St. Louis	13.925
Prime Western Zinc, E. St. Louis	12.500
Straits Tin, New York	121.50
Primary Aluminum Ingots, del.	20.000
Antimony, f.o.b. Laredo, Tex.	34.500
Nickel, f.o.b. refinery	56.500
Silver, New York	83.250

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 21.50c, Conn. Valley; fabricators' 24.62½c delivered.

Brass Ingots: 85-5-5-5 (No. 115) 27.25c; 80-10-10 (No. 215) 30.00c; 80-10-10 (No. 305) 31.00c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 13.00c; brass special 13.25c; intermediate 13.50c; East St. Louis; high grade 14.25c delivered.

Lead: Common 11.50c; chemical 11.70c; corroding 11.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 20.00c base, 1-ton lots. Base price for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb or less orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades notch bars, granulated or shot, Grade 1, 18.50c; grade 2, 18.00c; grade 3, 18.00c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%), standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American (99.90%), and over but not meeting specifications below 34.50c; 99.5% and over extreme 0.06% max. other impurities 0.4% max) 33.00c, f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes (99.9%, base sizes of refinery, unpacked 56.00c; 2-lb pigs 59.50c; "S" nickel and 60.50c "F" nickel; hot or ingots for additional cost 3.00, 6.00. Prices include import duty.

Mercury: Open market, spot, New York $217-$220, nominal per 76-lb flask.

Beryllium Copper: 3.75-4.25% Be $1.65 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: "Regular" straight to flat forms $1.75-$2 del, special or patented shapes $2.15.

Cobalt: 97.99% $2 to per lb for 400 lb; keg $2.42 per lb for 100 lb; cases $2.47 per lb under 100 lb.

Gold: U. S. Treasury $35 per ounce.

Silver: Open market, New York 81.2c per oz.

Platinum: $90-$95 per ounce from refineries.

Palladium: $23-$24 per troy ounce.

Iridium: $175-$185 per troy ounce.

Titanium (sponge form): $6 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective July 1, 1952)

Sheet: Copper 43.32, yellow brass 40.17, commercial bronze 95% 41.13, 90% 41.33, red brass 80% 43.10, 70% 42.34, best quality 41.13, nickel silver 18% 49.05, phosphor bronze grade A, 5% 64.71.

Rod: Copper, hot rolled 41.37, cold drawn 42.92, yellow brass free cutting 34.84, commercial bronze 95% 41.84, 90% 41.07, red brass 80% 42.29, 70% 42.00.

Seamless Tubing: Copper 45.36, yellow brass 43.15, commercial bronze 90% 47.04, red brass 80% 46.01.

Wire: Yellow brass 40.16, commercial bronze 95% 43.41, 90% 44.67, red brass 80% 43.29, 70% 42.61, best quality brass 41.61.

(Base prices effective July 1, 1952)

Copper Wire: Bare, soft, f.o.b. eastern mills, 400,000 lb 32.25c, 30,000 lb lots 32.92c, 1,000 lb 33.42. Weatherproof 100,000 lb 33.60c, 30,000 lb 33.85c, 1 lb 34.35. Magnet wire, del. 15,000 lb or more, 38.25c, 1-lb 39.50.

ALUMINUM

(30,000 lb base, freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb or), orders. Effective Aug. 1, 1952.)

Sheets and Circles: 2s and 3s mill finish c.f.

Thickness Range Inches	Widths or Diameters, Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Circle Base
0.249-0.136	12-48	31.6	...	...
0.135-0.096	12-48	32.1	...	...
0.095-0.077	12-48	32.8	30.6	34.9
0.076-0.061	12-48	33.1	30.8	35.1
0.060-0.048	12-48	33.7	31.0	35.4
0.047-0.038	12-48	34.1	31.3	35.7
0.037-0.030	12-48	34.5	31.7	36.3
0.029-0.024	12-48	35.1	32.0	36.8
0.023-0.019	12-36	35.7	32.7	37.5
0.018-0.017	12-36	36.4	33.3	38.1
0.016-0.015	12-36	37.3	34.0	39.5
0.014	12-24	38.3	35.0	40.8
0.013-0.012	12-24	39.3	35.7	41.7
0.011	12-24	40.3	36.8	43.3
0.010-0.0095	12-24	41.1	37.6	44.8
0.009-0.0085	12-24	42.6	39.1	46.6
0.008-0.0075	12-24	44.0	40.3	48.4
0.007	12-18	45.2	41.7	50.6
0.006	12-18	47.0	43.1	52.4

*Lengths 72 to 156 inches. Maximum diameter 26 inches.

Screw Machine Stock: 5000 lb and over

Dia. Dist. or distance across flats	Round H317-T4	Hexagonal H317-T4	H78-T4
0.125	44.6	...	...
0.126-0.0155	46.2	...	...
0.250-0.313	43.6	...	...
0.374	42.0	48.3	50.1
0.496	42.0	...	...
0.435	42.0	48.3	50.1
0.469	42.0	...	...
0.500	42.0	48.3	50.1
0.531	42.0	...	...
0.563	42.0	...	47.3
0.594	42.0	...	...
0.625	42.0	45.7	47.3
0.656	42.0	...	47.3
0.750-1.000	41.0	43.1	44.6
1.063	41.0	...	43.1
1.125-1.500	39.1	41.0	43.1
1.563	38.9	...	...
1.625-	38.3	...	41.0
1.688-2.000	37.3	...	...

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 100 sq ft or more $19.75 per cwt; add 50c cwt 100 sq ft to 100 sq ft. Pipe: Full coils $19.75 per cwt. Traps and bends: List prices plus 65%.

ZINC

Sheets 23.00c, f.o.b. mill 30,000 lb and over. Ribbon zinc in coils, 20,000-30,000 f.o.b. mill 30,000 lb and over. Plates, not over 12 in. 21.25-21.75c, over 12 in. 21.25-21.75c.

"A" NICKEL

(Base prices f.o.b. mill effective Dec. 15, 1952) Sheets, cold rolled 79.50c; Strip, cold rolled 84.50c; Rods and shapes 75.50c; Plates 77.50c; Seamless tubes 108.50c.

MONEL

(Base prices f.o.b. mill effective Dec. 15, 1952) Sheets, cold rolled 63.00c; Strip, cold rolled 61.00c; Rods and shapes 61.00c; Plates 62.00c; Seamless tube, 96.00c; Shot and blocks 56.00c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb 54.00-62.00c; 25 to 99 lb 43.00-52.00c; 100 lb to 5000 lb 41.00c.

TITANIUM

(Prices per lb 10,000 lb and over, f.o.b. mills) Sheets $15, sheared mill plate $12, strip $15, wire $10, forgings $6, hot rolled and forged bars $6.

DAILY PRICE RECORD

1953	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Jan. 7	24.00	14.00	13.00	121.00	20.00	34.00	56.00	82.25
Jan. 2-6	24.00	13.50	13.00	121.00	20.00	34.00	56.00	82.25
1952								
Dec. 30-31	24.00	13.50	12.50	121.00	20.00	34.00	56.00	82.25
Dec. 29	24.00	14.00	12.50	121.00	20.00	34.00	56.00	82.25
Dec. 22-27	24.00	14.00	12.50	121.00	20.00	34.00	56.00	82.25
Dec. 1-20	24.00	13.80	12.50	121.00	20.00	34.00	56.00	82.25
Dec. Avg.	24.00	13.925	12.50	121.00	20.00	34.00	56.00	82.25
Nov. Avg.	24.00	13.965	12.50	121.00	20.00	34.00	56.00	82.25
Oct. Avg.	24.00	14.256	14.250	121.00	20.00	34.00	56.00	82.25
Sept. Avg.	24.00	15.00	15.00	121.00	20.00	34.00	56.00	82.25
Aug. Avg.	24.00	15.00	14.967	121.00	19.923	34.00	56.00	82.25
July Avg.	24.00	15.00	15.00	121.00	19.00	34.00	56.00	82.350
June Avg.	24.00	15.00	15.71	121.00	19.00	34.00	56.00	82.75
Jan. 1952 Avg.	24.00	15.00	16.50	109.104	19.00	50.00	56.00	88.00
Jan. 1948 Avg.	21.50	14.825	11.036	94.00	15.00	33.00	33.25	74.925

NOTE: Copper, electrolytic del. Conn. Valley; Lead, common grade del. St. Louis; Zinc, prime western E. St. Louis; Tin, straits del. New York; Aluminum primary ingots 99%, del.; Antimony, bulk f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes 99.9%, base sizes at refinery, unpacked; Silver, open market, New York. Prices, cents per pound, except silver, cents per ounce.

Plating Materials

Chromic Acid: 99.9%, flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c, 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb, f.o.b. shipping point, freight allowed. Flat, rolled 38.34c, oval 37.84c.

Nickel Anodes: Rolled oval, carbonized, carloads 71.50c; 10,000 to 30,000 lb 75.50c; 3000 to 10,000 lb 76.50c; 500 to 3000 lb 77.50c; 100 to 500 lb 79.50c; under 100 lb, $2.50c f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in pots of 300 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 300 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 86.7c; 100 or 300 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb 67.6c; 2000 to 9900 lb 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.42.500 to 900 lb $1.42½, 200 to 495 lb $1.43, less than 200 lb $1.44½. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.50c, 10 or more drums 52.50c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11, more than 2000 lb $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl, 95% 100 lb kegs 99%. Freight allowed.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point effective June 26, 1951

	Clean Red Heavy	Clean Red Ends	Clean Turnings
Copper	21.50	21.00	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver (10%)	21.50	21.25	10.75
Phos. Bronze 5%	25.25	25.00	24.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 10,000 lb f.o.b. point of shipment)

Group I: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.25; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass 17.00 per lb of dry Cu content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material. Group II: No. 1 soft red brass solids 18.00, No. 1 composition borings 19.25 per lb of Cu content plus 65 cents per lb of Sn content, mixed brass borings 19.25 per pound of Cu content plus 60 cents per lb of Sn content, unlined red car boxes 18.25, lined red car boxes 17.25, cocks and faucets 16.00, mixed brass screens 16.00, zincy bronze solids and borings 16.25.

Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap: 2s solids, copper free 16.50, high grade borings and turnings, 5.00, No. 12 piston borings and turnings 7.00. Mixed plant scrap: Copper-free solids, 10.00, dust, type 2, 9.00, obsolete scrap: Pure old cable 10.00, sheet and sheet utensils 7.25, old castings and pistons, 7.25, clean pistons, free of struts 7.25, pistons with struts, 6.25.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Lead: Heavy 10.75-11.25, battery plates 5.00-6.15, linotype and stereotype 12.00-13.00, electrotype 10.75-11.00, mixed babbitt 13.75-14.00.

Zinc: Old zinc, 5.50-6.00, new die cast scrap, 5.50-6.00, old die cast scrap, 4.00-4.50.

Advertisement

ELECTROMET Data Sheet

A Digest of the Production, Properties, and Uses of Steels and Other Metals

Published by Electro Metallurgical Company, a Division of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, N. Y. • In Canada: Electro Metallurgical Company of Canada, Limited, Welland, Ontario

How CHROMIUM and TUNGSTEN Increase Strength of High-Temperature Alloys

The aircraft field has served as an important "proving ground" for the high-temperature alloys that have been developed for gas turbines required to operate at elevated temperatures. However, these alloys are now demonstrating their superior properties for other primary power applications, including gas turbines to operate electrical generators for stationary or motive power.

While there are literally dozens of different alloys available for high-temperature use, most of them contain the alloying elements chromium and tungsten for the express purpose of enhancing resistance to scaling and increasing their hardness and strength at elevated temperatures. The amount used is generally determined by the stresses and temperatures expected in service. Other alloying metals may also be added for special purposes — such as columbium, manganese, silicon, and titanium.

Chromium and Tungsten as Strength-Builders

Even small amounts of chromium and tungsten are effective in increasing the strength of high-temperature alloys. An important consideration is, of course, the exposure time—particularly when operating temperatures go above 1200 degrees Fahrenheit. Although the major role of chromium is to prevent scaling, it has been found that chromium, as well as tungsten, also helps the alloys to maintain their strength when they are exposed to high temperatures for long periods of time.

In addition to chromium and tungsten, the combination of other alloying metals present will likewise influence the strength of the alloys. Heat treatment, too, will influence the properties of these materials. However, in obtaining the higher ranges of strength needed at extremely high temperatures, chromium and tungsten are essential.

Where High-Temperature Alloys Are Used

Special high-temperature alloys containing chromium and tungsten are being used for the construction of gas turbines that power railroad locomotives, ships, airplanes, and electric generating plants. Some typical parts made of these alloys are rotors, turbine blades, nozzle vanes, ducts, and housings. These parts are exposed to temperatures of from 1200 to 1500 degrees Fahrenheit.

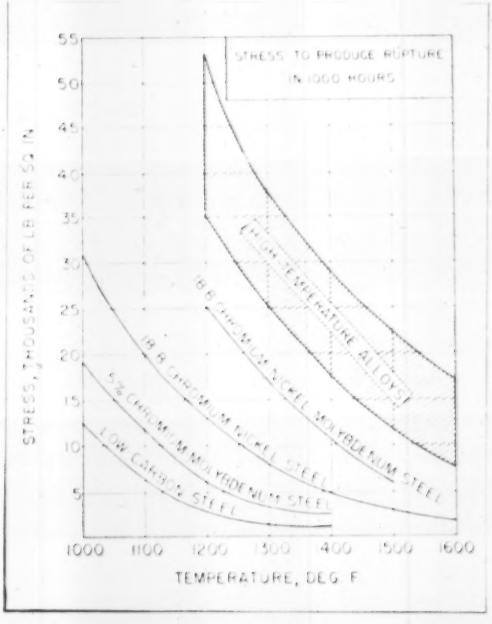


Fig. 1. Here is the average range of strength of various high-temperature alloys compared with other metals.

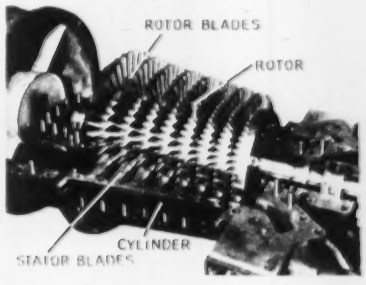


Fig. 2. Rotor and stator blades in this locomotive-type gas turbine are precision cast of an alloy containing about 24 per cent chromium and 6 per cent tungsten. The rotor body and cylinder housing are forged from an alloy containing about 19 per cent chromium and 12 per cent tungsten.

If You Need Technical Help

Those producing high-temperature alloys who wish technical help in the selection of alloying metals will find ELECTROMET's metallurgists glad to cooperate. In addition to chromium and tungsten alloys, ELECTROMET also produces ferroalloys of columbium, manganese, silicon, and titanium for use in making high-temperature alloys. If you wish further information about the properties and uses of these alloys, write to the nearest ELECTROMET office.

Ask for our booklet "Electromet Products and Service." It describes over 50 metals and alloys produced by ELECTROMET and tells of the unique technical service offered to the metal industries.

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Semifinished Steel . . .

Semifinished Prices, Page 99

Birmingham—Tennessee Coal & Iron Division, U. S. Steel Co., produced at an average rate of 106 per cent of capacity last year with ingot output 2.7 million tons and shipments of finished products totaling about 2 million tons. No sign of weakening demand is noticeable. Customers' requirements continue strong. Capacity of Tennessee Division's Fairfield sheet mill is being increased, a third continuous galvanizing line being installed. The division has put its two new open-hearth furnaces at Fairfield into operation. The other 10 are being enlarged.

Detroit—Ford Motor Co. has taken its No. 10 open-hearth furnace out of operation for complete rebuilding. The work will require five to six weeks.

Sheets, Strip . . .

Sheet and Strip Prices, Page 99 & 100

Cleveland—Consumer pressure for sheets and strip continues unabated. If anything, it is stronger than a month ago. First quarter books are filled and some tonnage tickets for the period will die unplaced unless government control authorizes their validation for cashing in second quarter.

There will be substantial carryover from first to second quarter since only March output is available for orders placed specifically for that period. January and February production is committed against carryover from fourth quarter, 1952. Many first quarter tickets accepted by the mills, consequently, can't possibly be honored before second quarter.

Sheetmakers are booking second quarter tonnage cautiously. Most are booking specialties, such as silicon and coated sheets, for the entire period, but they are accepting hot and cold-rolled sheet orders generally on a month-to-month basis. At least one leading maker has deferred opening its second quarter books on hot and cold-rolled until it can better appraise its supply position.

Over-all, supply appears just about as tight as at any time the past year or so. Capacity operations are indicated into last half of the year, some market observers unreservedly predicting high-level demand through the entire year. Even hot strip, reported in easier supply at some points, is on the tight list in this area. Lifting of the 30-day inventory limitation on consumer stocks, now fixed at 45 days, will serve to increase pressure on the market.

Boston—Flat-rolled steel carryover entering second quarter will be smaller due largely to conservative booking through January-March. Demand for sheets is so heavy difficulty may be experienced in placing all tickets. A considerable number for first quarter are unplaced. Easing in galvanized, notably in secondary channels, continues. Production schedules on strip are not as badly clogged as on sheets. There is a good deal of sheet slitting to strip widths and more distributors and consumers are installing slitting equipment.

New York—Producers of hot and cold-rolled sheets anticipate an active second quarter. Tonnage may be a little easier by virtue of increased capacity, but actual volume rolled will be as heavy as in first quarter. They expect substantial business in silicon sheets and stainless, among other specialties.

Philadelphia—Demand for all major grades of carbon and coated sheets continues strong, exceeding trade expectations. Same is true of some specialties, such as silicon sheets, enameling stock and chrome nickel grades. These latter are under close government control. Producers anticipate active operations throughout first half.

Pittsburgh—Sheet and strip will be produced at capacity during second quarter. At the moment, automotive users aren't getting all the tonnage they want, and are feeling the pinch.

Chicago—Sheetmakers have opened second quater order books and designated quotas to customers. Most consumers were disappointed, expecting more than they got. Judging by their commitments mills are assured capacity operations through midyear.

Birmingmam—Sheet supply continues tight and no marked change in conditions is in prospect for the near future.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 99

Atlanta—Fabrication of reinforcing bars is being resumed by Atlantic Steel Co. Producer of deformed reinforcing bars for over 25 years, the company was active as a fabricator until 1942.

Seattle—Rolling mill operations are again at levels permitted under power conservation regulations. Northwest Steel Rolling Mills Inc. resumed after two weeks suspension for overhaul. Furnaces operated throughout the shutdown.

Wire . . .

Wire Prices, Page 101

Boston—Routine wire orders are being booked for second quarter, with first quarter books filled except for some fine wire specialties. Textile requirements are in this latter category equipment builders living off inventory. All finished wire on order for automobile assembly is under pressure; also spring wire for upholstery. There will be more heading wire or rods for screw manufacturers next quarter. This month will see most mills clear fourth quarter carryover. Manufacturers of music wire can ship a larger range of sizes and grades from stock.

Philadelphia—Manufacturers wire is in tight supply but continued lag in demand for merchant wire products, notably nails, is in evidence.

Pittsburgh—Wire products are moving sluggishly. Most popular item is galvanized wire. Order books for first quarter are filled.

Cleveland—While merchant wire products demand has not been as robust in recent weeks as that for other steel products, some sellers sense a slight pickup since the first of the year. Current dullness in the merchant items, fencing, nails, etc., is, in large measure, due to seasonal factors. Buying on farm account is sluggish at this time of the year, and building operations are slow. On the other hand, manufacturers' wire is in strong demand and makers anticipate no letup of any consequence in requirements in the months immediately ahead.

Chicago—Merchant wire products continue to show the easier trend which developed recently. It appears most shortages have evaporated. On farm items, such as fencing and barbed wire, this is the slack sales season.

Structural Shapes . . .

Structural Shape Prices, Page 99

Pittsburgh—Strong demand is expected through second quarter. While military needs remain unknown, sufficient construction projects are depending upon this district for structurals to assure good demand for the first six months of the year and probably through third quarter. Biggest talk this week among structural producers is the San Rafael bridge, San Francisco, Calif. Principal bidders were American Bridge Division, U. S. Steel Corp. and Bethlehem Steel Corp. They bid $28 million and $20 million respectively. Talk concerns low bidder, from the West Coast who says he can do it for about $20-$21 million. Meanwhile a suit has been entered to stop building any bridge. Idea is a dike-covered by a bridge, and a fresh water reservoir.

Boston—Mild flurry in fabricated structural steel for industrial expansion includes 650 tons for a new plant for the Simplex Wire & Cable Co., Cambridge, Mass. At Newington, N. H., pier sheds take 2300 tons. Increase in structural steel allocations for second quarter finds most large shops booked solidly through that period. More plain material is in sight earlier for the smaller shops than for the larger fabricators. With improvement in steel supply ahead, notably for highways and bridges, competition for building contracts is growing with some pressure on prices in place. For a pier shed, Fall River, Mass., involving 5500 tons, the low quotation on steel erected was 13.04c per pound.

Second quarter steel allotment for highways, including bridges, is 372,500 tons compared with 305,000 tons in first quarter.

New York—Structural fabricators continue to have difficulty obtaining shapes. Mills, they say, are behind two or three weeks on delivery promises on the bulk of tonnage, and in many instances, are behind more than that on certain necessary sizes and specifications.

Philadelphia—Fabricators look for a tough first quarter in steel procurement but anticipate some improvement the following quarter. However, they expect supply to continue to fall short of needs. Much new work is in prospect in the way of bridges, public projects, and miscellaneous commercial construction.

Structural steel allotments for second quarter have been stepped up to 1,692,785 tons to permit more tonnage for highways, electric power projects and certain other types of building, and for railroad equipment and barges. However, these allotments exceed estimated supply, which

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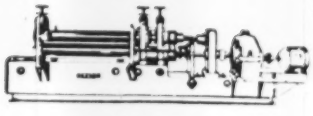

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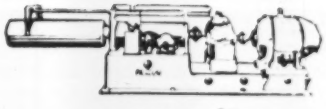

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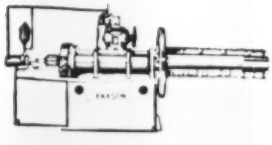

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for next quarter is 1,415,000 tons. Structural fabricators will be permitted to revalidate first quarter tickets for second quarter, an exception to the general rule.

San Francisco—Fabricators have had some of their jobs thrown into arrears because of lack of structural shapes. Many complain their CMP tickets are no more than a hunting license and the "hunt" is far from good.

Seattle—Fabricators begin the new year with large order backlogs. Many major projects will be placed in first quarter.

Tubular Goods . . .

Tubular Goods Prices, Page 103

Cleveland—Tight supply conditions in tubular goods are not expected to ease much before third quarter. While the mills are pushing out tonnage in capacity volume, they are not yet able to catch up with demand. Jobbers are getting in tonnage regularly but not in the volume they desire. Buttweld receipts are reported improving, but seamless is said to be in as tight supply as ever. Jobbers are unable to place all of their second quarter seamless allotments. Welded tubing is reported fairly plentiful. Pipe jobbers here report they are still experiencing above normal demand, this, in part, being attributed to inquiries from outside their usual marketing areas, reflecting the tight supply conditions in tubular goods throughout the country.

Galvanized pipe discounts have been lowered to reflect the recent increase in the price of zinc from 12.50 cents to 13 cents per pound.

Boston—Buttweld pipe stocks of distributors are better balanced. Some sellers are curtailing on late first quarter allotments. With most, sales for some weeks have been below quotas. Light wall electric welded tubing is in ample supply, including stainless and alloy. Seamless is tightest of the tubular products. Warehouses take all tonnage alloted, notably 12-inch and under, and direct shipment openings are sold through first quarter.

New York—Reflecting the increase in zinc prices, United States Steel Export Co., this city, revised its price schedule on galvanized pipe, tubes and wire. Base prices, including freight to New York, Philadelphia and Baltimore, effective with shipments from producing mills Jan. 3, are:

American Standard Pipe, T & C, galvanized: Buttweld, 2½ and 3 in., 16.65 per cent discount; seamless, 2 in., 1.15 per cent discount; 2½ in. and 3 in., 3.15 per cent discount; 3½ in. and 4 in., 5.15 per cent discount; 5 in. and 6 in., 9.90 per cent discount.

English gas tubes, galvanized: buttweld, 2½ in. and 3 in., 18.55 per cent discount.

Galvanized plain wire: $6.695 per 100 lb.

Philadelphia—Pipe jobbers are pressing the mills for tonnage as shipments continue to fall short of demands.

Seattle—Municipal stock requirements feature the cast iron pipe market. Seattle opened bids Jan. 7 for about 300 tons. Another project, involving 175 tons, was awarded by the contractor.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 103

New York—While bolt and nut producers are booked well ahead on the larger sizes, especially those required in the construction field, they report an easing in their position on fasteners for manufacturing assemblies. Some can make shipments within six weeks on these latter. Export demand is off compared with several months ago, due to stronger competition of European manufacturers, especially France and Belgium. Actually foreign makers are competing to an increasing degree for domestic business along the eastern seaboard, with prices ranging anywhere from 5 to 10 per cent under domestic levels. Foreign deliveries range around 8 to 10 weeks and on some limited sizes of bolts and nuts, shipments can be made from stock on this side.

Plates . . .

Plate Prices, Page 99

Philadelphia—Some commercial holders of fourth quarter tickets have been unable to cash them in, although they were good for rollings through February. Also, a large number of first quarter tickets held by civilian consumers will prove worthless as producers have practically one month, March, in which to do anything with them. They cannot be revalidated for rolling beyond the first quarter, except possibly in connection with some structural activity.

Boston—Walsh-Holyoke Steam Boiler Works will fabricate 9000 tons of electric welded steel pipe in a wide range of sizes for the Atomic Energy Commission. Work will be done at South Portland, Me. at a shipyard where a fabricating shed is being renovated and re-equipped at a cost of $1 million. Both pipe and fittings will be machined and nickel-plated, bringing the total pipe contract to approximately $10 million.

Plate mill books are filling for second quarter where tickets are available for the heavier and wider sizes. Also sheared plate capacity is scheduled more promptly. Only narrow and lighter gage strip-mill plates are improving as regards supply.

New York—Plate demand is strong for many lines of processing equipment, notably electrical equipment, and shipbuilding requirements are in excess of supply. However, there is a leveling off in demand for plates for boilers, reflecting the fact most industrial construction in this area is past peak. Chemical requirements are not too pressing at the moment. Overall demand though in this district is highly active and local sellers see little easing for some weeks.

Pittsburgh—Military demand remains high and a comfortable market is awaiting any increased tonnage available.

Birmingham—Plate users are seeking more tonnage but they are not meeting with much success. Heavy gage plates are extremely scarce.

Seattle—Largest plate contract pending totals 6000 tons for the Hanford works expansion for which Kaiser engineers will receive bids Jan. 14. Several important fuel storage jobs are pending for military air bases in Washington state. Plates continue scarce but delivery on rated orders from Geneva, Utah, is now scheduled at 90 days while structurals from this works require an average of 120 days.

Steel Bars . . .

Bar Prices, Page 99

New York—Most leading carbon bar sellers are proceeding cautiously in accepting tonnage for second quarter. Some are accepting nothing beyond April. In the main, allotments to commercial consumers are on about the same level as those in the current quarter. Meanwhile, various producers are turning down requests for considerable tonnage covered by first quarter tickets, as they have to devote the bulk of their January and February production to tonnage covered by fourth quarter tickets, leaving them only March to handle first quarter ticket business.

Boston—Carbon and alloy bars lead other finished steel products in direct defense consumption. Additional contracts have been placed for shells and fuzes on which peak production will not be reached for some weeks. With aircraft included, together with indirect components, antifriction bearings for instance, total bar tonnage entering into extended armament contracts is impressive. This will tend to restrict commercial volume in second quarter though slightly more tonnage is in sight in small carbon sizes, notably from converters.

Philadelphia—A number of hot-rolled carbon bar producers will have a substantial carryover at end of this quarter. On certain sizes the overflow may amount to as much as a month. Greatest jam is in sizes ranging from 1½ inches up.

Pittsburgh—Bar mills in the district anticipate a strong second quarter. Current orders indicate users are optimistic about their business for the period. Military demand is making inroads on bar availability, especially quality bars in the larger sizes and this will be felt during the second quarter.

Cleveland—Except for the small sizes, bars continue in just as tight supply position as ever. This reflects the steady pressure of military and defense demand on the market. Alloy bars are not in as short supply as some time back, some producers having open space in late second quarter schedules. Automotive and other civilian goods makers are pressing for tonnage but are limited in placements to allotment tickets.

Chicago—Demand for bars, except sizes under 1-inch diameter, shows no sign of abating. Producers are assured capacity output so far as they can see into the future.

Iron Ore . . .

Iron Ore Prices, Page 105

New York—Reports received here are to the effect Canadian iron ore production has reached the point where it is about equal to the country's current requirements. Until

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Warehouse . . .

Warehouse Prices, Page 105

Chicago—Warehouses are gaining inventory-wise but it isn't enough to measure accurately. Demand holds steady on all products in tight supply. Some of the recent inventory improvement stems from reduced consumption during the holiday season.

Boston—Except galvanized, supply of sheets is improved slightly in relation to demand. Distributors are getting more flat-rolled, but demand remains strong. Carbon plates and bars are in limited supply, notably in larger sizes. Structurals also are scarce.

Philadelphia—Some leading warehouses report inventories about half of normal compared with 25 per cent at end of the steel strike. Despite this gain distributors are unable to make headway on some grades and sizes, tonnage moving out about as fast as received.

Pittsburgh—No semblance of a balanced inventory exists among warehouses here. Receipts of scarcer items are not in keeping with demand pressure. Heavy plates, large diameter bars and bar shapes are the items most sought with structurals following close behind.

Cleveland—District warehouses are in receipt of a heavy volume of inquiries. Demand is well diversified and although distributors' stocks are larger and better balanced than some time back, they are still critically short of most wanted items, such as hot and cold-rolled sheets, wide flange structurals, heavy plates and bars 2-inch and over. Strip and galvanized sheets are under less pressure, in the case of the latter this being attributed to the seasonal lull in building, furnace and similar work.

Birmingham—Warehousemen report stocks are gradually building up. Some products are moving to consumers almost as quickly as they are received from the mill.

Pig Iron . . .

Pig Iron Prices, Page 98

Boston—Through March the price of Mystic foundry pig iron will be $39.50 per gross ton, Everett, Mass., furnace; malleable $60, plus differentials for silicon, phosphorus and manganese. Prices are established on average costs during September-October, there being no production in November. The Everett furnace will be back in capacity production late this month.

New York—Movement of foundry pig iron is picking up but has not reached preholiday levels. Most district shops report little pickup in demand for castings. Only in basic iron does there appear to be any stringency.

Buffalo—Pig iron production here rebounded to 91 per cent of capacity as Republic Steel Corp. relighted its third furnace which had been down for relining. Despite talk of a leveling off in merchant iron demand, sellers report no difficulty finding takers.

Philadelphia—Pig iron demand is recovering from the holiday lull but it is still far from brisk. Gray iron foundry operations remain sluggish. Soil pipe makers are operating at a low ebb and pressure pipe plants are less active than in months. Only in basic iron does there appear to be any real suggestion of tight supply. The Nancy furnace at the Fairless Works, Morrisville, Pa., went down about two weeks ago for repairs. It is expected to be idle another two weeks.

Pittsburgh—After the holiday lag, foundries in the district are more active and expect brisker business during early part of this year.

Cleveland—Foundry operations are recovering from the holiday lull but no appreciable increase in demand pressure for merchant iron is noted. Sentiment among the foundrymen is somewhat improved and with the government limitation on inventories now raised to 60 days as against 30 formerly, merchant sellers anticipate some pickup in demand. Since the furnaces now are disposing of all their production without difficulty any marked expansion in demand would quickly tighten up now relatively balanced supply in the merchant iron market.

Chicago—Demand for gray iron castings continues the mild improvement noted late last year. Foundry melt, however, has not increased to the point where there is any strain on pig iron supply.

Birmingham—Some additional pig iron tonnage is available from time to time, reflecting, to some extent, slower production of cast iron pipe at some plants and a not too busy foundry industry.

Scrap . . .

Scrap Prices, Page 106

Philadelphia—District steel mills are in fairly comfortable position on scrap. However, they have been favored by good weather and should severe storms be experienced some consumers would soon be in a bad position, as their inventories at most do not exceed three weeks' supply. Prices on steel grades continue at ceiling. Cast scrap is weak with only one major grade, heavy breakable, holding at ceiling.

Buffalo—New business and lifting of the embargo on shipments to a leading mill got the scrap market off to a fast start in the new year. Orders at ceiling level for approximately 20,000 tons of steelmaking grades were placed by a leading buyer. Dealers accumulated upward of 15,000 tons during the embargo.

Pittsburgh—No immediate upsurge is anticipated in the scrap market in the Pittsburgh district. Aside from electric furnace grades, mills aren't buying heavily. Of course, no good scrap is going begging, but there is no great amount available. Cast grades are a drug on the market.

Cleveland—The scrap market is holding on even keel with the mills taking shipments steadily though on a restricted basis. More selectivity in acceptances is in evidence. Steelmaking grades are moving at the full ceilings and substantial purchases in the Pittsburgh and Cincago areas since the opening of the year at ceiling have served to give additional support to the market despite the fact mill stocks are comfortable. The cast market continues soft pricewise although a firming tendency is reported by some dealers and brokers in step with the pickup in foundry operations following the holiday lull.

Chicago—Scrap market activity has carried into the new year with about the same tone that existed before yearend. Consumption of steelmaking grades holds at capacity but receipts better than match this tonnage. The last week inclement weather restricted collections, preparation and shipments, but not seriously. Some cast grades have slipped further in price.

Birmingham—Renewed activity is noted in the scrap market. The district's largest user again is in the market for minimum shipments of 80,000 pounds. Cast grades, except for No. 1 cupola, remain largely without takers.

San Francisco—Scrap is moving satisfactorily. Over the holidays deliveries were not equal to the melt. Prices on steelmaking grades have not changed recently. No. 1 cupola cast is holding at $41 delivered although one steel consumer is paying $40, plus a maximum of $2.50 a ton freight.

Seattle—The largest scrap buyer in this market announces it is paying $2 to $3 under ceiling, depending on point of origin and freight costs. This is the first time in months less than top levels prevail in this area for heavy melting steel. Current price range quoted is $32 to $33. Cast iron is generally $10 under ceiling, at about $31. Supply is ample. Motor blocks are quoted $31 top.

Canada . . .

Toronto—Algoma Steel Corp. will increase capital expenditures on plant and equipment by $10 million bringing total outlay for its expansion program to be completed by end of this year to $50 million.

Included in expansion at Sault Ste. Marie, is a 25-ft. hearth blast furnace which will increase pig iron capacity to 1,280,000 tons. Steel ingot capacity will be boosted to 1,240,000 tons annually, and rolling capacity of the blooming mill has been increased to handle all ingot output.

The new bar and strip mill adds 250,000 tons capacity for finished products. Capacity of the rail and structural mill has been increased by 60,000 tons a year, and its products broadened. Coke oven capacity will be raised to 1,340,000 annually. A sintering unit of 400,000 tons capacity has been installed.

Subsidiary companies of Algoma also are undergoing expansion. At Canadian Furnace Co., Port Colborne, blast furnace capacity to produce merchant iron is being increased by 50,000 tons to 275,000 tons. Sintering capacity at Algoma Ore Properties is being raised 158,000 tons to 1,232,000 tons.

Toronto—With increased domestic production and betterment in imports from the United States, there is some easing in Canadian iron and steel supply. Further easing is indi-

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cated as new production units come into operation. Shortages, however, are expected in some lines until end of second quarter. Cold-rolled and galvanized sheet supplies are not likely to ease before midyear.

European mills are seen making a determined effort to retain their grip on the Canadian market. Some of these foreign producers reduced prices on bars, beams, channels and plates for Canadian delivery. The new prices, it is said, will make European steel more competitive with that from the U. S. when St. Lawrence river navigation opens in spring.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

11,000 tons, new Mid America home office Prudential Insurance Co., Chicago, to American Bridge Division, United States Steel Corp.

4,000 tons, state highway bridges in Seneca and Cayuga counties, New York, to American Bridge Co., Pittsburgh.

2,500 tons, office building, Lescaze Construction Co., Fifth avenue at 54th street, New York, to Harris Structural Steel Co., that city.

540 tons, Anacostia bridge, Department of Interior, Washington, through Charles Tompkins, to Harris Structural Steel Co., New York.

600 tons, plant, Simplex Wire & Cable Co., Newington, N. H., to Bancroft & Martin Rolling Mills Co., South Portland, Me.

300 tons, store and warehouse, Logan Square Inc., Norristown, Pa., to Bethlehem Steel Co., Bethlehem, Pa.

240 tons, Junior High School No. 57, Brooklyn, N. Y., to Schacht Steel Construction Co., New York.

230 tons, Washington state Nisqually river bridge, to Poole, McGonigle & Dick, Portland, Oreg. Also 10 tons reinforcing to James English, Tacoma, Wash.; David Nygren, Seattle, general contractor.

100 tons, addition to Olympia Brewing Co.'s plant, Olympia, Wash., to Pacific Car & Foundry Co., Seattle.

STRUCTURAL STEEL PENDING

2100 tons, hangars, air base, Limestone, Me., bids to U. S. Engineer, Boston.

2000 tons, estimated, 20-story office building for Charles & Milton A. Kimmelman, 460 Fifth Ave., New York; request for steel approved by National Production Authority.

1750 tons, fabricated structurals, pier No. 1, Boston & Albany terminal, East Boston, Mass., Raymond Concrete Pile Co., New York, low.

1200 tons, Washington state twin truss span, Cowlitz river, bids to Olympia, Jan. 20.

1100 tons, tank modification plant, building, Chrysler Corp., Newark, Del., bids closed Jan. 6.

685 tons, state highway bridge, Essex county, New Jersey, bids Jan. 27.

326 tons, state highway bridge, Essex county, New Jersey, bids Jan. 23.

300 tons, Rainier avenue viaduct, Seattle, state highway project; bids to Olympia, Wash., Jan. 13.

300 tons, plant structure, R. F. Sturtevant Division, Westinghouse Electric Corp., Hyde Park district, Boston.

170 tons, repairs, Little Pine Creek dam, General State Authority, Lycoming county, Pa., bids Jan. 14.

REINFORCING BARS . . .

REINFORCING BARS PLACED

175 tons, Ladd field dormitory, Alaska, to Tri-con Steel Division, Republic Steel Corp., Portland, Oreg.; Baker & Ford, Bellingham, Wash., general contract $1,136,196.

104 tons, office building for 7th & Marion Corp., Seattle, to Bethlehem Pacific Coast Steel Corp., that city.

REINFORCING BARS PENDING

1000 tons, reinforcing bars, pier No. 1, Boston & Albany terminal, East Boston, Mass., Raymond Concrete Pile Co., New York, low.

500 tons, Rainier avenue viaduct, Seattle, state highway project; bids to Olympia, Jan. 13.

450 tons, state highway bridge, Essex county, New Jersey; bids Jan. 27.

360 tons, Washington state highway project, Lewis county; bids to Olympia, Jan. 20.

182 tons, Washington state highway projects, Clark, Spokane and Lewis counties; bids to Olympia, Jan. 13.

167 tons, state highway bridge, Essex county, New Jersey; bids Jan. 23.

100 tons, ammunition storage facilities, Yakima, Washington, depot; bids in.

PLATES . . .

PLATES PLACED

60 tons, 100,000-gallon elevated water tank, Kirkland, Wash., to Chicago Bridge & Iron Co., Seattle.

PLATES PENDING

6000 tons, approximately, expansion at Banford Works; bids to Kaiser Engineers, Oakland, Calif., Jan. 14.

PIPE . . .

CAST IRON PIPE PENDING

7000 tons, Heinch, pier No. 1, Boston & Albany terminal, East Boston, Mass., Raymond Concrete Pile Co., New York, low.

RAILS, CARS . . .

LOCOMOTIVES PENDING

Denver & Rio Grande Western, five 4-traction motor general purpose diesel units, included in 1953 equipment program.

RAILROAD CARS PENDING

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Here and There in Metalworking . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

American Radiator Modernizes Plant

Modernization program, costing in excess of $1 million, at the Tiffin, O., plant of American Radiator & Standard Sanitary Corp. is virtually completed. Additions to the plant include a new cast shop, warehouse and shipping area and enlarged and improved plant offices. A new integral furnace type heating boiler and mechanical coal handling system have been installed. Work is in progress on the repair and replacement of tunnel-kilns at the plant.

Vanadium-Alloys Expands in Canada

Vanadium-Alloys Steel Co., Latrobe, Pa., purchased Murray Steels Ltd., Toronto, Ont. Murray Steels has been the exclusive agency and distributor of Vanadium-Alloys products in Canada. Its acquisition is the first step in an expansion of the company's Canadian trade.

J. & L. Forms Supply Division

Jones & Laughlin Supply Co., Tulsa, Okla., formerly a wholly-owned subsidiary of Jones & Laughlin Steel Corp., Pittsburgh, is now a division of the parent corporation. Rainey Elliott is general manager of the Supply Division. Canadian assets of Jones & Laughlin Supply Co. are being sold to the Jones & Laughlin Steel Sales Co. Ltd., Calgary, Alta.

Dynamatic Corp. Opens Branch

Eaton Mfg. Co.'s subsidiary, Dynamatic Corp., Kenosha, Wis., manufacturer of variable speed drives, opened a Philadelphia office at 4525 N. Broad St. Eugene Pohl is district manager.

Stressteel Schedules Plant Opening

Stressteel Corp. leased one of the former manufacturing buildings of the Sheldon Axle Works in Wilkes-Barre, Pa. It will be renovated for the start of production around the first of March. Raw material will come from Bethlehem Steel Co.

Ramsey Heads Aircraft Industries

Aircraft Industries Association of America Inc., Washington, elected Adm. DeWitt C. Ramsey (Ret.) as president for 1953. Elected to serve the first six months as chairman of the board of governors is Mundy I. Peale, president, Republic Aviation Corp., Farmingdale, Long Island, N. Y.; for the second half of the year, Oliver P. Echols, chairman, Northrop Aircraft Inc., Hawthorne, Calif. Rufus T. Amis Jr., president, Aero Design & Engineering Co., Bethany, Okla., was elected chairman, Utility Airplane Council of the association for 1953.

Shepard Niles Marks 50th Year

Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y., is observing its 50th anniversary this year.

Meehanite Metal Moves Headquarters

Meehanite Metal Corp., New Rochelle, N. Y., moved into a building at 714 North Ave., that city. The quarters provide enlarged laboratory facilities for experimental melting, chemical and physical testing and photomicrographic studies.

Algoma Steel To Build Coke Ovens

Algoma Steel Corp. Ltd., Sault Ste. Marie, Ont., will build a battery of 57 coke ovens, lifting the firm's production capacity to 1,340,000 tons a year. This project is part of a $10 million increase in the company's original $40 million expansion program.

Offers To Lease Conveyors

Gravity and belt conveyors are available on lease under a new rental plan announced by James R. Sebastian, president, Rapids-Standard Co. Inc., Grand Rapids, Mich. This enables firms to install and use the equipment without making a major capital investment. The lease plan is currently available in Chicago, Philadelphia, New York, Buffalo and Grand Rapids.

Joy Mfg. Plans Expansion

Joy Mfg. Co. plans consolidation of three plants in Franklin, Pa. The mining machinery manufacturing firm will combine the plants in an expansion program.

Copperweld To Make Ledloy

Copperweld Steel Co., Glassport, Pa., was licensed by Inland Steel Co., Chicago, to produce Ledloy. Copperweld is installing equipment at its Warren, O., plant and expects to begin producing the new product by the second quarter. It will make stainless, alloy and electric furnace grades, adding lead to make the steel more machinable.

Seaporcel Metals Names Agents

Seaporcel Metals Inc., Long Island City, N. Y., fabricator of architectural and marine porcelain enamel products, appointed as its sales

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drop-forged clips

ENGINEERED FOR SAFETY

Heavy, steel U-bolt; hot galvanized after threading to prevent weakening from rust or corrosion.

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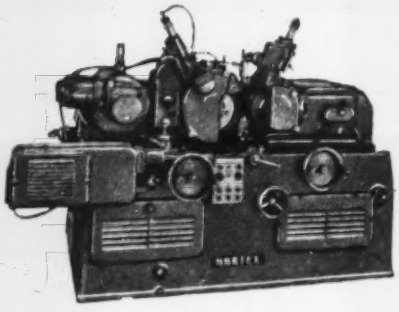

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Maximum diameter ground	2"
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Speed when grinding (6)	15-122 RPM
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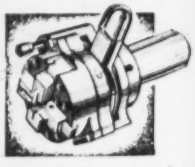

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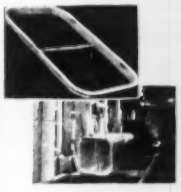

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Electronics Firm Opens Plant

Farmers Engineering & Mfg. Co., designer and manufacturer of products for electronic communication and control, opened its plant at Irwin, Pa., which cost in excess of $1 million.

Kamloops To Build Oil Refinery

Kamloops Refinery Syndicate, Kamloops, B. C., will build a $3 million oil refinery in that city. Construction will begin early this year.

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ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES
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Wood Commemorates Anniversary

Coincident with its 150th anniversary, R. D. Wood Co., Philadelphia, reissued a photographic book covering certain of the company's production divisions. The book is designed to give an informative picture of some of the company's facilities, methods and equipment, particularly as they relate to hydraulic press and valve manufacture.

Alloy Casting Institute Grows

As a result of the growth of Alloy Casting Institute, New York, reflecting the expanding activities of the high-alloy foundry industry, the office of executive vice president has been created by the institute. Ernest A. Schoefer, formerly executive secretary, has been elected to serve in the new position.

Business Machine Firm To Expand

International Business Machines Corp., New York, plans to erect a research center at its Poughkeepsie, N. Y., plant early next spring, to be completed before the end of 1954. This will provide centralized facilities for the company's widespread electronics research program.

Federal Electric To Build Plant

Plans for the $1 million plant to be constructed in Scranton, Pa., for occupancy by Federal Electric Products Co. were approved by the superintendent of building inspection, that city. It is scheduled for occupancy next September. The company makes switch gear, generators and transformer distribution panels.

Westinghouse Appoints Sales Agents

Electronic Tube Division, Westinghouse Electric Corp., Elmira, N. Y., appointed Edward G. Brierty and Raymond E. Warner as its sales representatives for the midwest sales region under the direction of R. N. Stoddard, regional sales manager in Chicago.

David Bogen Co. Moves Plant

David Bogen Co. Inc., manufacturer of sound systems, high fidelity reproduction equipment and intercommunications systems, completed removal of its plant facilities to new quarters at 29 Ninth Ave., New York 14.

Wyatt Metal Plans Expansion

Wyatt Metal & Boiler Works, Houston, manufacturer of refinery and other major industrial equipment, is planning an expansion of $2 million or more. About $1 million will be invested in expansion at the Eureka, Tex., plant and another

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36" x ¼" cold, 40" hot
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24 ga.	36" x 96"	9 Sheets
22 ga.	36" x 96"	182 Sheets
19 ga.	36" x 96"	45 Sheets
19 ga.	44" x 120"	12 Sheets
16 ga.	44" x 120"	31 Sheets
13 ga.	36" x 110"	42 Sheets
13 ga.	36" x 120"	21 Sheets
13 ga.	44" x 120"	18 Sheets
12 ga.	48" x 144"	1 Sheet
11 ga.	48" x 144"	16 Sheets
3/16"	36" x 96"	7 Plates
3" Dia. Rd. Bars		394 ft. R.M.L.
4" Dia. Rd. Bars		189 ft. R.M.L.

STAINLESS STEEL

SHEETS—PLATES

22 ga.	48" x 120"	21 Sheets	Type 347
19 ga.	30" x 120"	24 Sheets	Type 347
12 ga.	48" x 144"	31 Sheets	Type 321
10 ga.	46" x 96"	74 Sheets	Type 304
9 ga.	36" x 96"	104 Sheets	Type 321
9 ga.	48" x 120"	2 Sheets	Type 321
9 ga.	48" x 144"	2 Sheets	Type 321
1/4"	36" x 96"	55 Plates	Type 321
3/8"	36" x 96"	2 Plates	Type 321
3/8"	36" x 120"	2 Plates	Type 321
1/2"	35" x 64"	3 Plates	Type 321

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1,000 40 Cu. Ft. Oxygen Cylinders, Round Bottom Reconditioned and Tested
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2 OXYGEN PLANTS, Independent 02-B, new 600 cu. ft. per hour, 20-25 meters, complete less power unit $7,500 each

1 ACETYLENE PLANT, Linde, used, 500 cu. ft. per hour, complete, ready to run $6,500

1 OXYGEN PLANT, Air Products, 600 Cu. Ft. per hour, complete, liquid pump type, used

1 5-Ton Freon Unit, complete, compressor and condensing unit

DYE OXYGEN COMPANY, INC. MFGRS.
3332 W. McDowell Road Phoenix, Arizona

FOR SALE

IMMEDIATE DELIVERY—WAREHOUSE STOCK

HOT ROLLED ROUNDS

1.	1 8" Dia.	2400 lbs
2.	3 16 Dia.	224 lbs
3.	1 4" Dia.	240 lbs
4.	5 16" Dia.	105 lbs
5.	3 8" Dia.	121 lbs
6.	1 2" Dia.	142 lbs
7.	3 4" Dia.	22 lbs
8.	13 16" Dia.	12 lbs
9.	15 16" Dia.	72 lbs
10.	1-1 16" Dia.	88 lbs
11.	1-3 16" Dia.	525 lbs
12.	1-1 4" Dia.	283 lbs
13.	1-3 8" Dia.	2761 lbs
14.	1-7 16" Dia.	76 lbs
15.	1-9 16" Dia.	1168 lbs
16.	2" Dia.	440 lbs
17.	2-1 8" Dia.	73 lbs
18.	2-1 4" Dia.	164 lbs
19.	2-7 16" Dia.	1663 lbs
20.	2-1 2" Dia.	5669 lbs
21.	2-3 4" Dia.	126 lbs

HOT ROLLED FLATS

1.	3 8" x1-1 8"	48 lbs
2.	3 8" x6"	111 lbs
3.	1 2" x6"	116 lbs
4.	1 2" x1-1 2"	90 lbs
5.	1 2" x1"	666 lbs
6.	1 2" x5"	645 lbs
7.	1 2" x1-1 4"	310 lbs
8.	5 8" x4"	134 lbs
9.	5 8" x5"	169 lbs
10.	3 4" x1-1 4"	146 lbs
11.	3 4" x2"	1105 lbs
12.	3 4" x2-1 4"	481 lbs
13.	3 4" x2-3 4"	1031 lbs
14.	3 4" x1"	105 lbs
15.	3 4" x2-1 2"	597 lbs
16.	1 x2	241 lbs
17.	2-1 4 x2-1 2"	255 lbs
18.	2-1 4 x2-3 4"	343 lbs
19.	2-1 4 x4"	160 lbs
20.	2-1 2 x4-1 16"	578 lbs

HOT ROLLED SQUARES

1.	5 8 x5 8"	203 lbs
2.	7 8" x 7 8"	415 lbs
3.	1-1 8" x 1-1 8"	450 lbs
4.	1-1 4" x 1-1 4"	58 lbs
5.	1-3 8" x 1-3 8"	71 lbs
6.	1-3 4" x 1-3 4"	60 lbs
7.	2" x 2"	240 lbs
8.	2-1 4" x 2-1 4"	277 lbs
9.	2-1 2" x 2-1 2"	172 lbs
10.	3" x 3"	394 lbs
11.	3 9 16" x 3 9 16"	191 lbs

HOT ROLLED HEX

1.	5 8"	25 lbs
2.	7 8"	30 lbs
3.	1-1 2"	810 lbs
4.	1-5 8"	129 lbs
5.	1-3 4"	46 lbs
6.	1-13 16"	2161 lbs
7.	2-9 16"	4764 lbs

ROUND BARS—HIGH CARBON

1.	1-7 16"	6,125 lbs
2.	1-13 16"	100,151 lbs
3.	1-15 16"	118,486 lbs
4.	8 5 8"	9,578 lbs

ROUND BARS—SAE 1095

1.	2-1 16" Dia.	10,750 lbs
2.	2-3 8" Dia.	7,006 lbs
3.	2-13 16" Dia.	5,175 lbs
4.	2-7 8" Dia.	14,329 lbs

ROUND BARS—ALLOY

1.	1" Dia.—Aircraft	3,000 lbs
2.	2-5 16" Dia.	8,742 lbs

JANDRU STEEL CORPORATION

131 Bruckner Boulevard New York 54, New York

Telephone: CYpress 2-5617

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Torrington Swaging Machines offer a means of reducing rod, wire and tubing that improves the quality of the material, gives a better surface, without waste of stock. Hammer blows (4000 a minute) speed production, and give the metal toughness and resiliency that cannot be obtained by any other method.

Write for your free copy of "The Torrington Swaging Machine." This informative booklet gives complete details on the art of swaging and the extensive line of Torrington Swagers.

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Swager Department
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Makers of
TORRINGTON NEEDLE BEARINGS

EDWIN L. KARPICK

ROBERT F. HUBER

Karpick, Huber Move Up on STEEL Staff

In a move to further improve and expand STEEL's coverage of the metalworking world, Edwin L. Karpick was appointed engineering editor and Robert F. Huber was made machine tool editor, effective Jan. 1, 1953. Mr. Karpick was formerly an associate editor and Mr. Huber was an assistant editor specializing in machine tool coverage.

$4 million will be spent to improve property for "field operations." This latter project will include buildings, steel sheds and paved areas for field-erected work, for sand blasting and a plant for steel plate pickling processes.

Zenith Radio Plans Expansion

Zenith Radio Corp., Chicago, will build a $3 million addition to its plant at 6001 Dickens, that city.

Burdett Oxygen Opens Plant

Burdett Oxygen Co., Youngstown, is producing oxygen, nitrogen and argon in its new $500,000 plant. The company plans to double the size of the plant within two years. Bernard Schlund is plant superintendent; John R. Spain, plant manager.

Sightmaster Appoints Representative

Sightmaster Corp., New Rochelle, N. Y., appointed Merchant & Evans Co. as exclusive distributor for Chemalloy in the Philadelphia area to service aluminum fabricators and the welding trade.

Gunnison Offers Air Conditioning

Gunnison Homes Inc., United States Steel Corp.'s housing subsidiary, and Carrier Corp., producer of air conditioning equipment, signed a contract under which Carrier will provide cooling and heating units to Gunnison homes as optional equipment in all of the latter's home models to be produced in 1953. This brings air-conditioning to the mass home market.

Maysteel To Make Gleason Reels

Maysteel Products Inc., Milwaukee, organized a subsidiary, Gleason Reel Corp., which purchased assets including machinery, equipment, inventory and manufacturing rights for Gleason reels from J. L. Gleason & Co. Inc., Cambridge, Mass. Operations at the Cambridge plant will be continued. Maysteel is a manufacturer of metal specialty products.

Vacuum Sweeper Firm To Expand

Interstate Engineering Corp., El Segundo, Calif., is building a factory in Anaheim for the manufacture of vacuum sweepers. The company manufactures a variety of precision instruments and articles in addition to sweepers at its home plant in El Segundo.

Washing Machine Maker Moves Plant

Industrial Washing Machine Corp. moved its plant to 32 Main St., Matawan, N. J. The new quarters provide four times the floor space of the former plant. Production will be increased to meet growing demand for industrial washing machines which are used extensively in the metal cleaning and treating field and in a wide diversity of other applications. As exclusive agents for the manufacturer, Industrial Sys-

tems Co. will continue to handle all sales matters through its New Brunswick, N. J., office.

Bates To Build Steel Joist Plant

Bates Expanded Steel Co., Youngstown, plans to build a plant and offices in that city. The firm was incorporated in Ohio late last year and bought the steel joist business conducted by Magnesium Co. of America, East Chicago, Ind.

American Electroneering Expands

American Electroneering Corp., Los Angeles, is constructing a factory building at 2040 Colorado St., Santa Monica, Calif., to manufacture test equipment, electronics, and for fabrication of sheet metal.

Consolidated Engineering To Build

Consolidated Engineering Corp., Pasadena, Calif., plans to erect a $1 million plant in Rochester, N.Y. The plant will house the vacuum control equipment business recently purchased from Distillation Products Division, Eastman Kodak Co. Consolidated specializes in manufacture of automatic controls for industrial processes.

DeBothezat Appoints Distributor

DeBothezat Fans Division, American Machine & Metals Inc., East Moline, Ill., appointed H. S. McKenzie Co., Portland, Oreg., as its representative for Oregon and southern Washington.

Multi-Clean Products Buys Firm

Multi-Clean Products Inc., St. Paul, purchased the Floor Sanding Machine Division, Lincoln-Schlueter Floor Machinery Co., Chicago. Manufacturing operations are being transferred to St. Paul.

Cockshutt Buys National Co-operative

Cockshutt Farm Equipment Ltd., Brantford, Ont., purchased the plant, equipment and manufacturing inventory of National Farm Machinery Co-operative Inc., Bellevue, O. For the last seven years National was the principal distributor of Cockshutt products in the United States.

Talon Expands in North Carolina

Talon Inc., Meadville, Pa., plans to build two plants in North Carolina. One will be located in Woodland and will manufacture a limited product line. The second plant will be located at Stanley and will be utilized for a tape weaving operation. Both plants are scheduled to begin operations in mid-1953. The company purchased all the manufacturing facilities of Slide Fastener Cord Co., Belmont, N. C.

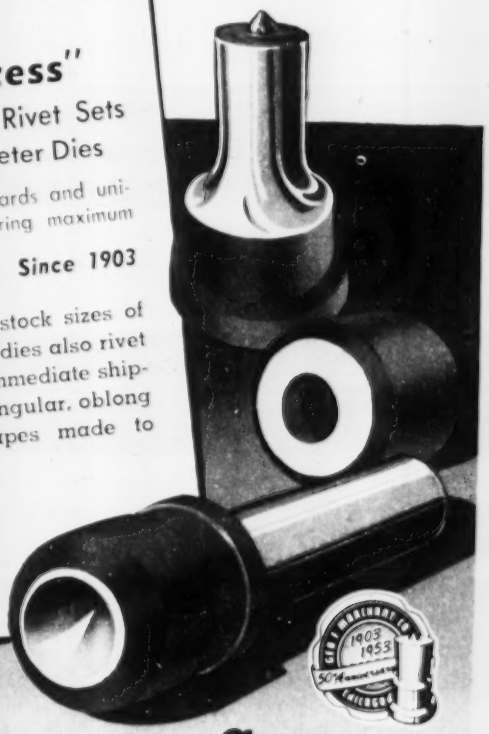
"New Process"

Punches • Dies • Rivet Sets
Compression Riveter Dies

Made of highest standards and uniform quality thus insuring maximum service. Since 1903

Large inventory of stock sizes of round punches and dies also rivet sets available for immediate shipment. Square, rectangular, oblong and elliptical shapes made to order.

Write Dept. A for Catalog 46



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It's Easy...with WITTEK Roll Feeds and Reel Stands

Wittek Roll Feeds handle any type of coiled strip stock and are made in single roll, double roll, and compound types with straighteners, in models to feed in any of four directions. They are reliable and accurate with simple, quick adjustment of feed length. Standard sizes and models meet a wide variety of press size and capacity conditions.

Wittek Reel Stands facilitate handling coiled stock.

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WITTEK Manufacturing Co.
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Automatic ROLL FEEDS AND REEL STANDS

. . or Released in an Instant

Faster assembly . . . no more failures of fasteners. GREER STOP NUTS hold firm against jolts, shocks, shimmy, wobbles . . . any vibration, any kind.

Bolt threads are gripped tightly . . . these famous nuts *never* work loose. Yet an ordinary hand wrench gives instant release. The tough, built-in GREERCOID collar does it . . . and seals against fluid leakage, too!

Study *your* fastener problem. Over 3000 types and sizes. Consult GREER. Proved on thousands of products. Meets gov't and military specifications.

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Stop Nuts

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Farval pays for itself quickly, many times over

...saving oiling labor
...saving lubricant
...saving bearing expense
...saving production time

WITH Farval you lubricate your machinery or equipment mechanically. Farval does the job quickly and dependably.

Any type of bearing surface, enclosed or open, can be Farval-lubricated with grease or oil. Measured charges of lubricant are metered to each bearing through the unique Dualine Valve, delivered under pressure from a central reservoir, either by a manually operated pump or one actuated by an automatic time-clock mechanism.

Farval is not a new idea. It has proved its value in service over a 23-year period, protecting millions of bearings in every phase of industry—in manufacturing plants, mining and quarrying operations, transportation—wherever there are bearings that have to be lubricated. Thousands of installations on mills, presses, conveyors, cranes, engines and other industrial equipment provide records of money saved. Savings take four forms:

1. Labor saving—Farval eliminates hand oilers. Minimum attention only is required—to inspect system, refill lubricant reservoirs, etc.

2. Lubricant saving—Correct amounts are used without waste, frequently reducing oil or grease consumption as much as 75%.

3. Bearing expense saving—No more burned out or damaged bearings with Farval protection. Expense of replacement eliminated.

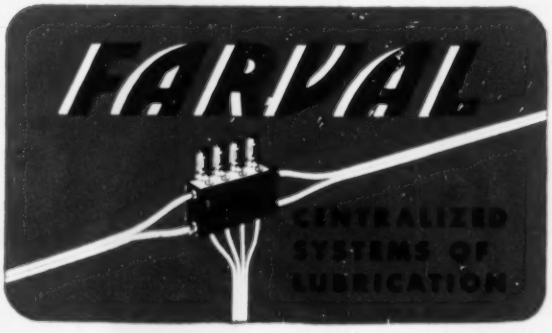
4. Production time saving—Farval lubricates while equipment is running. No shutting down to oil. No taking a machine out of production to repair or replace bearings.

In short, savings are so positive that you soon recover the entire cost of a Farval system—and savings continue as extra dividends.

If you want figures on savings possible with Farval on the types of machines you operate, just write us. Tell us what equipment you have and ask for Bulletin 25. The Farval Corporation, 5270 East 80th Street, Cleveland 4, Ohio.

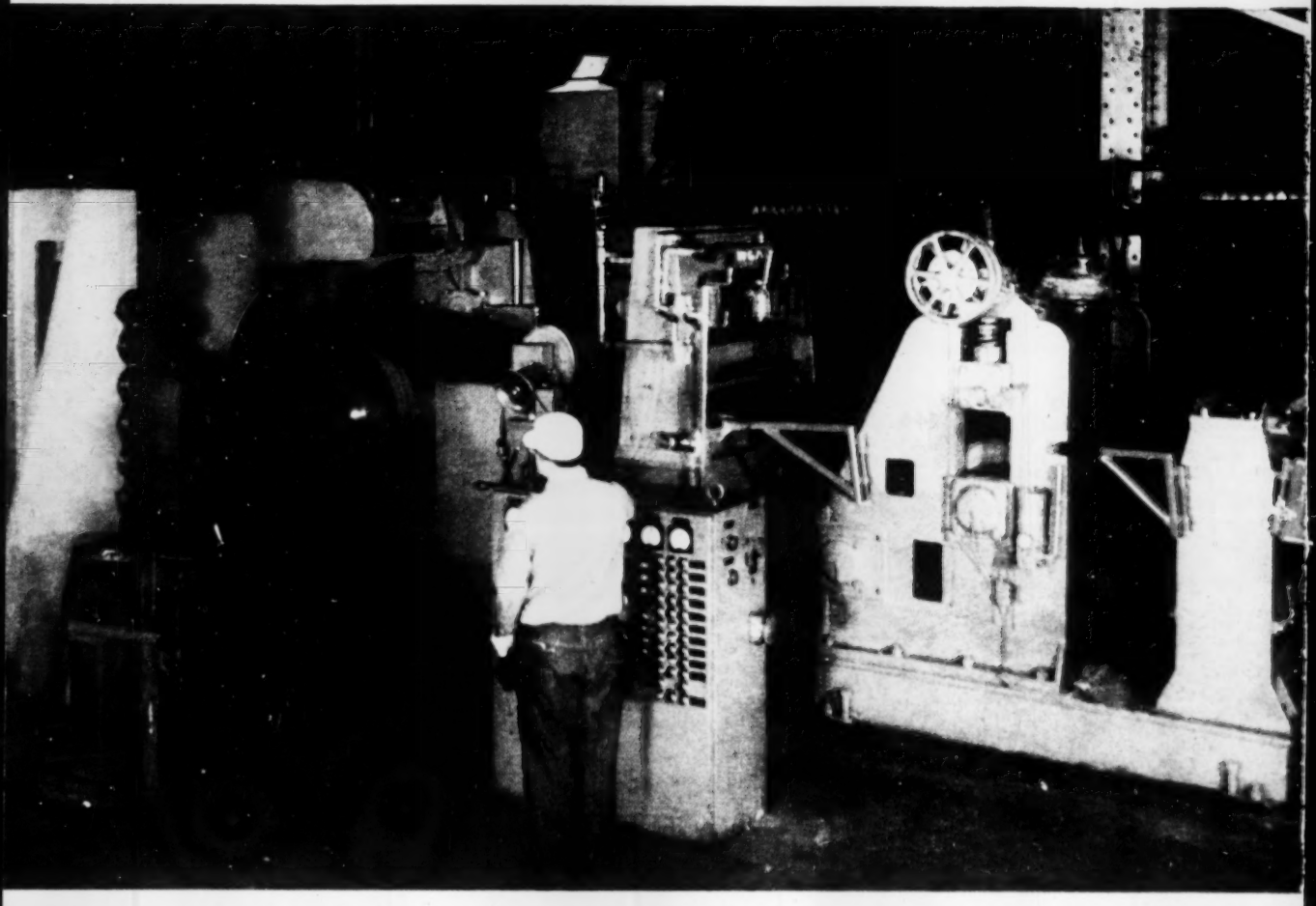
Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.

FARVAL—*Studies in Centralized Lubrication*
No. 122



WEAN

HIGH SPEED ELECTROLYTIC CLEANING LINE



SINCE the advent of modern electrolytic tin plate lines Wean has maintained leadership in the development and manufacture of faster, more efficient equipment.

Shown here is the latest in electrolytic cleaning lines. This equipment prepares the steel for subsequent coating operations at speeds heretofore considered unobtainable.

Leading users of tin plate equipment have learned that it's wise to confer with Wean engineers when planning improvements or expansion, for when it comes to experience Wean has long been one of the world's leading firms specializing in sheet, tin and strip mill equipment.

The WEAN ENGINEERING COMPANY, Inc.
WARREN OHIO